O‘ZBEKISTON RESPUBLIKASI OLIY VA O‘RTA MAXSUS TA’LIM VAZIRLIGI

TOSHKENT DAVLAT TEXNIKA UNIVERSITETI

“TASDIQLAYMAN”

O‘quv ishlari bo‘yicha prorektor

_____ O.O.Zaripov

“___” _____2019 yil

“OLIY MATEMATIKA” KAFEDRASI

Sirtqi ta’lim yo’nalishlari uchun

OLIY MATEMATIKA

fanidan

TOPSHIRIQLAR TO’PLAMI-3

Toshkent – 2019

Ushbu sirtqi ta’lim yo’nalishi talabalari uchun tuzilgan topshiriqlar to’plami oliy matematika fanining qatorlar, karrali integrallar va egri chiziqli integrallar bo’limlarini o’z ichiga olgan. Fanning ko’rsatilgan bo’limlaridan talabalar uchun nazariy va amaliy topshiriqlar tuzilgan.

Ushbu topshiriqlar to’plami mashinasozlik fakultetining “Oliy matematika” kafedrasi majlisida (**2019yil “ ” -son bayonnoma**) muhokoma etildi.

“Oliy matematika”
kafedra mudiri _____ dots. Sh.T. Pirmatov

“Oliy matematika” kafedrasi kotibi _____ kat.o‘q. G. Abdikayimova

Ushbu topshiriqlar to’plami universitetning Ilmiy-uslubiy kengashida ko‘rib chiqildi va tasdiqlandi. **(2019 yil “ ” _____ - son bayonnoma).**

O‘quv uslubiy boshqarma boshlig‘i _____N. Mambetov

3-tipik hisob
Nazariy savollar

1. Sonliqatorlar. Musbat hadli qatorlarning yaqinlashish va uzoqlashish beigilari.

2. Funksional qatorlarularning yaqinlash ishsohasi.

3. Darajali qatorlar.

4. Funksiyalarni Teylor va Makloren qatorlariga yoyish.

5. Darajali qatorlarning tadbiqlari.

6. Fur'e qatorlari.

7. Dekart koordinatalarida ikki o'lchovli integrallarni hisoblash.

8. Dekart koordinatalarida uch o'lchovli integrallarni hisoblash.

9. Ikki va uch o'lchovli integrallarda o'zgaruvchilarni almashtirish hamda ularning tadbiqlari.

10. Birinchi va ikkinchi tur egrichiziqli integrallar hamda ularning tadbiqlari.

Bajarish uchun vazifalar.

1– vazifa. Qatorlarning yaqinlashuvchi ekanini isbot qiling va ularning yig'indisini toping.

2– vazifa. Dalamber va Koshi belglaridan foydalanib quyidagi qatorlarning yaqinlashish yoki uzoqlashishini tekshiring.

3– vazifa. Integral belgidanfoydalanibquyidagiqatorlarniyaqinlashishgatekshiring.

4 – vazifa. Quyidagi qatorlarni Leybnits belgidan foydalanib yaqinlashuvchilikka tekshiring va yaqinlashish turini aniqlang.

5 – vazifa. Darajaliqatorlar. (1-15). Quyidagi qatorlarni yaqinlashish radiusini toping. (16-30). Quyidagi qatorlarni yaqinlash ishsohasini toping.

6 – vazifa. Teylor va Makloren qatorlarigayoying.

7– vazifa. Quyidagi keltirilgan sonlarni berilgan ε aniqlikda hisoblang.

8 – vazifa. Funksiyani berilgan oraliqlarda Fur'e qatoriga yoying.

9 – vazifa. Integrallash tartibini o'zgartiring.

10 – vazifa. (1-22) Ikkikarrali integralni hisoblang. (23-30) Berilgan chiziqlar bilan chegaralangan jismhajmini hisoblang.

11 – vazifa. Uch o'lchovli integrallarni hisoblang.

12 – vazifa. Birinchi tur egri chiziqli integralnihisoblang.

13 – vazifa. Ikkinchi tur egrichiziqli integralni hisoblang.

1 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{(2n-1)(2n+1)}$

2. $\sum_{n=1}^{\infty}\frac{n^n}{n!\cdot 2^n}$

3. $\sum_{n=1}^{\infty}\frac{1}{n(1+\ln n)}$

4. $\sum_{n=1}^{\infty}(-1)^n\cdot\frac{1}{n}$

5. $\sum_{n=1}^{\infty}\frac{(x)^n}{2^n}$

6. $f(x)=x^5-4x+2x^3+2x+1$ ko'phadni $(x+1)$ ikki hadning darajalari bo'yicha yoying.

7. $\cos 18^\circ, \varepsilon = 0,001$

8. $f(x)=\begin{cases}-2x, agar\ -\pi\le x<0\ bo'lsa,\\ 3x,\ agar\ 0\le x\le\pi\ bo'lsa.\end{cases}$ Ushbu funksiyani Fur'e qatoriga yoying.

9. $\int_{-2}^{-1}dy\int_{-\sqrt{2+y}}^{0}fdx+\int_{-1}^{0}dy\int_{-\sqrt{-y}}^{0}fdx.$

10. $\int_{0}^{1}\int_{1}^{2}\frac{1}{(x+y)^2}dxdy$

$\iiint_V 15(y^2+z^2)dxdydz:$

11. $(V):\begin{cases}z=x+y,\ x+y=1;\\ x=0, y=0, z=0.\end{cases}$

12. $I=\int_{\gamma}xydl$, buyerda γ-uchlariA(-2; -2), B(6; 1), C(2; 5) nuqtalardabo'lganuchburchakkonturi.

13. $I=\int_{\gamma}\frac{y^2dx-x^2dy}{x^2+y^2}$, buyerda γ-yarimaylana:
$x=a\cos t,\ y=a\sin t, 0\le t\le\pi$.

2 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{(3n-2)(3n+1)}$

2. $\sum_{n=1}^{\infty}\frac{(3n-2)!}{((n+1)!)^3}$

3. $\sum_{n=1}^{\infty}\frac{1}{\sqrt{6n+5}}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n-2}$

5. $\sum_{n=1}^{\infty}(n+1)x^n$

6. $f(x)=x^4-5x^3+x^2-3x+4$ ko'phadni $(x-4)$ikki hadning darajalari bo'yicha yoying.

7. $\cos 36^\circ, \varepsilon = 0,001$

8. $f(x)=x^2$ funksiyani $-\pi\le x\le\pi$ oraliqda Fur'e qatoriga yoying.

9. $\int_{0}^{1}dy\int_{-\sqrt{y}}^{0}fdx+\int_{1}^{\sqrt{2}}dy\int_{-\sqrt{2-y^2}}^{0}fdx.$

10. $\int_{0}^{2\pi}\int_{1}^{2+\sin x}\frac{y}{2}dxdy$

$\iiint_V 5x^2dxdydz:$

11. $(V):\begin{cases}4x+3z=1,\ y=4;\\ x=0,\ y=0,\ z=0.\end{cases}$

12. $I=\int_{\gamma}x^2dl$, buyerda γ-birinchichorakdagi $8y^2=x^3$ egrichiziqning $y^2=2x$ parabola bilanajratilganqismi.

13. $I=\int_{\gamma}(2a-y)dx-(a-y)dy,$ buyerda γ-sikloidaningbirinchiarki:
$x=a(t-\sin t),\ y=a(1-\cos t), 0\le t\le 2\pi$

3 – variant

1. $\sum_{n=1}^{\infty}\frac{3^n+2^n}{6^n}$

2. $\sum_{n=1}^{\infty}\frac{(n!)^2}{(2n)!}$;

3. $\sum_{n=1}^{\infty}\frac{3}{n^2+4}$

4. $\sum_{n=1}^{\infty}(-1)^n\cdot\frac{1}{n^2}$

5. $\sum_{n=1}^{\infty}\frac{(x)^n}{n}$

6. $f(x)=\frac{1}{x+1}$ funksiyani Makloren qatoriga yoying.

7. $\cos 72^\circ, \varepsilon = 0,001$

8. $f(x)=x$ funksiyani $-\pi \le x \le \pi$ oraliqda Fur'e qatoriga yoying.

9. $\int_0^1 dy\int_0^y fdx+\int_1^{\sqrt{2}} dy\int_0^{\sqrt{2-y^2}} fdx.$

10. $\int_0^4\int_y^2 (3x^2-2xy+y)dxdy$

$\iiint_V \frac{dxdydz}{1+\frac{x}{3}+\frac{y}{4}+\frac{z}{8}}$:

11. $(V):\begin{cases}\frac{x}{3}+\frac{y}{4}+\frac{z}{8}=1;\\ x=0, y=0, z=0.\end{cases}$

12. $I=\int_\gamma (x^{4/3}+y^{4/3})dl$, buyerda γ-astroida: $x^{2/3}+y^{2/3}=a^{2/3}$.

13. $I=\int_\gamma y^2dx-xydy$, buyerda γ- A(1; 1), B(3; 4) nuqtalarnitutashtiruvchito'g'richiziqkesmasi.

4 – variant

1. $\sum_{n=1}^{\infty}\frac{n}{(2n-1)^2(2n+1)^2}$

2. $\sum_{n=1}^{\infty}\frac{n^3}{3^n}$;

3. $\sum_{n=1}^{\infty}\left(\frac{1+n}{1+n^2}\right)^2$

4. $\sum_{n=1}^{\infty}(-1)^n\cdot\frac{n}{n^2+1}$

5. $\sum_{n=1}^{\infty}(nx)^n$

6. $f(x)=lnx$ funksiyani $x_0=1$ nuqta atrofida Teylor qatoriga yoying.

7. $\sin 18^\circ, \varepsilon = 0,001$

8. $f(x)=$ $\begin{cases}-x, agar\ -2\le x<0\ bo'lsa,\\ x, agar\ 0\le x\le 2\ bo'lsa.\end{cases}$ Ushbu funksiyani Fur'e qatoriga yoying.

9. $\int_0^1 dy\int_0^{\sqrt{y}} fdx+\int_1^2 dy\int_0^{\sqrt{2-y}} fdx.$

10. $\int_0^1 dx\int_{\sqrt{y}}^{2-y} xdxdy$

$\iiint_V (3x+4y)dxdydz$:

11. $(V):\begin{cases}y=x,\ y=0,\ x=1;\\ z=3(x^2+y^2),\ z=0.\end{cases}$

12. $I=\int_\gamma (x-y)dl$, buyerda γ-aylana: $x^2+y^2=ax$.

13. $I=\int_\gamma yzdx+zxdy+xydz$, buyerda γ-vintchizig'iningbirinchio'rami: $x=R\cos t,\ y=R\sin t,\ z=\frac{at}{2\pi},\ 0\le t\le 2\pi$.

5 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n(n+3)}$

2. $\sum_{n=1}^{\infty}\frac{2^n}{n^2}.$

3. $\sum_{n=2}^{\infty}\frac{1}{n(\ln n)}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{3n-2}{3n-1}$

5. $\sum_{n=1}^{\infty}\frac{(2x-3)^n}{2n-1}$

6. $f(x)=x^{10}-3x^5+1$ ko'phadni $(x-1)$ ikki hadning darajalari bo'yicha yoying.

7. $\sin 36^\circ, \varepsilon = 0{,}001$

8. $f(x)=$ $\begin{cases}-x, agar\ -\pi \le x < 0\ bo'lsa,\\ x^2,\ agar\ 0 \le x \le \pi\ bo'lsa.\end{cases}$ Ushbu funksiyani Fur'e qatoriga yoying.

9. $\int\limits_{-\sqrt{2}}^{-1}dx\int\limits_{-\sqrt{2-x^2}}^{0}fdy+\int\limits_{-1}^{0}dx\int\limits_{x}^{0}fdy.$

10. $\iint\limits_D\frac{x^2}{y^2}dxdy$ $D: y=-x, y=x^2$ *va* $y=1$ chiziqlarbilanchegaralangansoha.

$\iiint\limits_V(27x+54y^2)dxdydz:$

11. $(V):\begin{cases}y=x,\ y=0,\ x=1;\\ z=\sqrt{xy},\ z=0.\end{cases}$

12. $I=\int\limits_\gamma(x-y)dl$, buyerda γ chiziq $r^2=a^2\cos 2\varphi$ lemnistikataningo'ngyaprog'i.

13. $I=\int\limits_{(1;1;1;)}^{(4;4;4)}\frac{xdx+ydy+zdz}{\sqrt{x^2+y^2+z^2-x-y+2z}}$ to'g'richiziqkesmasibo'yichahisoblansin.

6 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{(3n-1)(3n+2)}$

2. $\sum_{n=1}^{\infty}n\left(1-\frac{1}{n}\right)^{n^2}$

3. $\sum_{n=1}^{\infty}\frac{\ln(n+1)}{(n+1)^2}$

4. $\sum_{n=1}^{\infty}(-1)^n\cdot\frac{2n}{n+1}$

5. $\sum_{n=1}^{\infty}\frac{(x+1)^n}{2^n}$

6. $f(x)=\frac{1}{x}$ funksiyani $x_0=3$ nuqta atrofida Teylor qatoriga yoying.

7. $\sin 72^\circ, \varepsilon = 0{,}001$

8. $f(x)=\sin x$ funksiyani $[0,\pi]$ da kosinuslar bo'yicha Fur'e qatoriga yoying.

9. $\int\limits_0^{1/\sqrt{2}}dy\int\limits_0^{\arcsin y}fdx+\int\limits_{1/\sqrt{2}}^{1}dy\int\limits_0^{\arccos y}fdx.$

10. $\iint\limits_D xdxdy$ D: sikloidaningbirarkasi.

$\iiint\limits_V\frac{dxdydz}{(1+\frac{x}{16}+\frac{y}{8}+\frac{z}{3})^2}:$

11. $(V):\begin{cases}\frac{x}{16}+\frac{y}{8}+\frac{z}{3}=1;\\ x=0, y=0, z=0.\end{cases}$

12. $I=\int\limits_\gamma(x^2-z)dl$, buyerda γ chiziq $x=t,\ y=\frac{\sqrt{3}t^2}{\sqrt{2}},\ z=t^3$ egrichiziqningyoyi $(0\le t\le 1)$.

13. $I=\int\limits_\gamma(y-z)dx+(z-x)dy+(x-y)dz$, buyerda γ-aylana: $x^2+y^2+z^2=a^2$, $y=xtg\alpha$, $(0\le\alpha\le 2\pi)$. Ox o'qiningmusbatqismidanqaragandaayla nasoatmillariharakatigateskariyo'nalish dao'tilsin.

7 – variant

1. $\sum_{n=1}^{\infty}\frac{5^n+2^n}{10^n}$

2. $\sum_{n=1}^{\infty}\left(\frac{n+2}{2n+1}\right)^{3n+1}$

3. $\sum_{n=1}^{\infty} n e^{-n^2}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{\ln(n^2+1)}$

5. $\sum_{n=1}^{\infty} n!\,x^{n-1}$

6. $f(x)=\sqrt{x^3}$ funksiyani $x_0=1$ nuqta atrofida Teylor qatoriga yoying.

7. $e^{\frac{1}{2}}, \varepsilon = 0{,}00001$

8. $f(x)=1-\frac{x}{2}$ funksiyani $[0,2]$ da sinuslar bo'yicha Fur'e qatoriga yoying.

9. $\int_{-2}^{-1} dy \int_{0}^{\sqrt{2+y}} f dx + \int_{-1}^{0} dy \int_{0}^{\sqrt{-y}} f dx.$

10. $\iint_D y^3 dydx$ integralnihisoblangbuyerda

$D: y^2 = x,\ y^2 = 2x,\ xy = 1 va\, xy = 4$

chiziqlarbilanchegaralangansoha.

11. $\iiint_V (3x^2+y^2)dxdydz$:

$$(V):\begin{cases} z = 10y,\ x+y=1; \\ x=0, y=0, z=0. \end{cases}$$

12. $I=\int_{\gamma}\sqrt{2y^2+z^2}\,dl$, buyerda γ-aylana:

$$\begin{cases} x^2+y^2+z^2=a^2 \\ y=x \end{cases}.$$

13. $I=\int_{\gamma} y^2dx - x^2dy$, buyerda γ: $y=x^2$ parabolaning $A(0;0),\ B(2;4)$ nuqtalariorasidagiyoyi.

8 – variant

1. $\sum_{n=1}^{\infty}\frac{2n+1}{n^2(n+1)^2}$

2. $\sum_{n=1}^{\infty}\left(\arcsin\frac{1}{n}\right)^n$

3. $\sum_{n=1}^{\infty}\frac{1}{\sqrt{n}}\ln\frac{n+1}{n-1}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{\ln(n+1)}$

5. $\sum_{n=1}^{\infty}\frac{n!x^n}{(n+1)^n}$

6. $f(x)=e^x$ funksiyani Makloren qatoriga yoying.

7. $e^{\frac{1}{3}}, \varepsilon = 0{,}00001$

8. $f(x)=x^3$ funksiyani $[-1;\ 1]$ da sinuslar bo'yicha Fur'e qatoriga yoying.

9. $\int_{0}^{1} dy \int_{-\sqrt{y}}^{0} f dx + \int_{1}^{e-\ln y} dy \int_{-1}^{-\ln y} f dx.$

10. $\iint \sqrt{x^2+y^2}\,dxdy$ integralnihisoblangbuyerda

$D: x^2+y^2 = x\, va\, x^2+y^2 = 2x$

aylanalarbilanchegaralangansoha.

11. $\iiint_V (15x+30z)dxdydz$:

$$(V):\begin{cases} z = x^2+3y^2,\ z=0; \\ y=x,\ y=0,\ x=1. \end{cases}$$

12. $I=\int_{\gamma} x^2yzdl$, buyerda γ-chiziq $x^2+y^2=z^2,\ x^2+y^2=9$ egrichiziqning (aylana) yoyi.

13. $I=\int_{\gamma} y^2dx + z^2dy + x^2dz$, buyerda γ-Vavianachizig'i: $x^2+y^2+z^2=a^2, x^2+y^2=ax$ ning (x,y) tekislikdanyuqoridagiqismidir.

9 – variant	**10 – variant**
1. $\sum_{n=1}^{\infty}\frac{1}{(2n-1)(2n+5)}$	1. $\frac{3}{5}+\frac{3}{5}\cdot\frac{1}{3}+\frac{3}{5}\cdot\frac{1}{9}+\frac{3}{5}\cdot\frac{1}{27}+\ldots$
2. $\sum_{n=2}^{\infty}\frac{1}{(2n-1)\ln(2n-1)}$	2. $\sum_{n=1}^{\infty}\frac{2n+3}{3n-2}$;
3. $\sum_{n=1}^{\infty}\frac{e^{-\sqrt{n}}}{\sqrt{n}}$	3. $\sum_{n=2}^{\infty}\frac{1}{n\ln^2 n}$
4. $\sum_{n=1}^{\infty}(-1)^n\cdot\frac{n}{n^2-1}$	4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n^3}{2^n}$
5. $\sum_{n=1}^{\infty}\frac{(x-1)^n}{2^n}$	5. $\sum_{n=0}^{\infty}\frac{(x)^n}{2^n\cdot\sqrt{n+1}}$
6. $f(x)=2^x$ funksiyani Makloren qatoriga yoying.	6. $f(x)=\frac{1}{x}$ funksiyani $x_0=2$ nuqta atrofida Teylor qatoriga yoying.
7. $e^{\frac{1}{4}}, \varepsilon=0,00001$	7. $\ln 0,98, \varepsilon=0,0001$
8. $f(x)=\cos x$ funksiyani $[0,\pi]$ da sinuslar bo'yicha Fur'e qatoriga yoying.	8. $f(x)=$ $\begin{cases}1+x, agar\ -1\le x<0\ bo'lsa,\\ -1,\ agar\ 0\le x\le 1\ bo'lsa.\end{cases}$ Ushbu funksiyani Fur'e qatoriga yoying.
9. $\int_{\sqrt{2}}^{-1}dx\int_{0}^{\sqrt{2-x^2}}fdy+\int_{-1}^{0}dx\int_{0}^{x^2}fdy.$	9. $\int_{-2}^{-\sqrt{3}}dx\int_{-\sqrt{4-x^2}}^{0}fdy+\int_{-\sqrt{3}}^{0}dx\int_{\sqrt{4-x^2}-2}^{0}fdy$
10. $\iint_D(x^2+3y^2+2)ds\ D:x^2+y^2=4$	10. $\iint_D(x^2+xy+2y^2)ds\ D:x=0, y=0\ va\ x+y=1$ chiziqlar bilan chegaralangan soha.
11. $\iiint_V(4+8z^3)dxdydz:$ $(V):\begin{cases}y=x,\ y=0,\ x=1;\\ z=\sqrt{xy},\ z=0.\end{cases}$	11. $\iiint_V(1+2x^3)dxdydz:$ $(V):\begin{cases}y=36x,\ y=0,\ x=1;\\ z=\sqrt{xy},\ z=0.\end{cases}$
12. $I=\int_{\gamma}zdl$, buyerda γ-chiziq $x^2+y^2=z^2,\ y^2=ax$ egrichiziqning $O(0;0;0)$ nuqtasidan $A(a;a;a\sqrt{2})$ nuqtasigachabo'lganyoyi.	12. $I=\int_{\gamma}(2x-3y)dl$, bu yerda γ chiziq $r=a\sqrt{\cos 2\varphi}$ lemnistikataning o'ng yaprog'i.
13. $I=\int_{\gamma}y^2dx+x^2dy$, buyerda γ-chiziq $A(-a;0)$ nuqtadan $B(a;0)$ gachabo'lganyarimellipsyoyidir: $x=a\cos t,\ y=b\sin t$.	13. $I=\int_{\gamma}(y^2-z^2)dx+2yzdy-x^2dz$, buyerda γ egrichiziq $x=t,\ y=t^2,\ z=t^3, (0\le t\ge 1)$.

11 – variant	**12 – variant**
1. $\frac{1}{1\cdot 2\cdot 3}+\frac{1}{2\cdot 3\cdot 4}+\frac{1}{3\cdot 4\cdot 5}+\frac{1}{4\cdot 5\cdot 6}+\ldots$	1. $\frac{1}{1\cdot 4}+\frac{1}{4\cdot 7}+\frac{1}{7\cdot 10}+\frac{1}{10\cdot 13}+\ldots$
2. $\sum_{n=1}^{\infty}\frac{1}{\sqrt[3]{n}+2}$;	2. $\sum_{n=1}^{\infty}\left(1-\frac{1}{n}\right)^{n^2+1}$;
3. $\sum_{n=2}^{\infty}\frac{1}{n\ln^5 n}$	3. $\sum_{n=2}^{\infty}\frac{1}{n\ln^6 n}$
4. $\sum_{n=1}^{\infty}(-1)^n\cdot\frac{1}{n+1}$	4. $\sum_{n=1}^{\infty}(-1)^n\cdot\frac{1}{n\cdot ln\,(n+1)}$
5. $\sum_{n=1}^{\infty}\frac{(2x+1)^n}{2n-1}$	5. $\sum_{n=1}^{\infty}\frac{(n+1)^5x^{2n}}{2n+1}$
6. $f(x)=cos\sqrt{x}$ funksiyani Makloren qatoriga yoying.	6. $f(x)=\frac{3}{2-x-x^2}$ funksiyani x ning darajalari bo'yicha qatorga yoying.
7. $\sqrt{27}$, $\varepsilon=0,001$	7. $\sqrt{8}$, $\varepsilon=0,001$
8. $f(x)=\pi-x$ funksiyani $(-\pi,\pi]$ da Fur'e qatoriga yoying.	8. $f(x)=\frac{x^2}{2}-1$ funksiyani $[-3;3]$ da Fur'e qatoriga yoying.
9. $\int_0^{\pi/4}dy\int_0^{\sin y}fdx+\int_{\pi/4}^{\pi/2}dy\int_0^{\cos y}fdx.$	9. $\int_{-2}^{-1}dx\int_{-(2+x)}^{0}fdy+\int_{-1}^{0}dx\int_{\sqrt[3]{x}}^{0}fdy$
10. $\int_0^1\int_0^2 xy(x+y)dxdy$	10. $\int_0^1\int_{x^2}^{x}xy^2dxdy$
$\iiint_V(60y+90z)dxdydz$:	$\iiint_V(\frac{10}{3}x+\frac{5}{3})dxdydz$:
11. $(V):\begin{cases}y=4x,\ y=0,\ x=1;\\ z=x^2+y^2,\ z=0.\end{cases}$	11. $(V):\begin{cases}y=9x,\ y=0,\ x=1;\\ z=\sqrt{xy},\ z=0.\end{cases}$
12. $I=\int_{AB}^{\gamma}\frac{dl}{\sqrt{x^2+y^2}}$, buyerda AB-uchlari $A(0;-2)$, $B(4;0)$ nuqtalardaniboratkesma.	$I=\int_{\gamma}xydl$, buyerda γ-ushbu $x=0, y=0, x=4, y=2$ to'g'richiziqlardantashkiltopganto'rtburchak konturi.
13. $I=\int_{AB}\cos ydx-\sin xdy$, buyerda AB-kesma: $A(2;-2)$, $B(-2;2)$.	13. $I=\int_{AB}(x^2-y^2)dx+xydy$, buyerda AB-kesma: $A(2;2)$, $B(3;4)$.

13 – variant

1. $\frac{1}{1\cdot 4}+\frac{1}{2\cdot 5}+\frac{1}{3\cdot 6}+\frac{1}{4\cdot 7}+\ldots$

2. $\sum_{n=1}^{\infty}\frac{(3n)!}{(n!)^3 2^{3n}}$;

3. $\sum_{n=2}^{\infty}\frac{1}{n\ln n(\ln\ln n)^{1+\alpha}},(\alpha>0)$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n\cdot 2^n}$

5. $\sum_{n=1}^{\infty}\frac{(x+1)^n}{(2n-1)!}$

6. $f(x)=e^{-2x}$ funksiyani Makloren qatoriga yoying.

7. $\sqrt{24}, \varepsilon = 0,001$

8. $f(x)=1-2x$ funksiyani $[0,1]$ da kosinuslar bo'yicha Fur'e qatoriga yoying.

9. $\int_0^1 dy\int_0^{\sqrt{y}} f dx+\int_1^e dy\int_{\ln y}^1 f dx.$

10. $\int_1^e\int_1^y \frac{y}{x}dxdy$

$\iiint_V (9+18z)dxdydz$:

11. $(V):\begin{cases} y=4x,\ y=0,\ x=1; \\ z=\sqrt{xy},\ z=0. \end{cases}$

12. $I=\int_\gamma \frac{dl}{x^2+y^2+4}$, buyerda γ - uchlari $O(0;0)$, $A(1;2)$ nuqtalardaniboratkesma.

13. $I=\int_{AB}(4x+y)dx+(x+4y)dy$, buyerda $A\breve{B}$ yoy $y=x^4$ egrichiziqningyoyi: $A(1;1)$ va $B(-1;1)$.

14 – variant

1. $\frac{2}{3}+\frac{2}{3}\cdot\frac{1}{2}+\frac{2}{3}\cdot\frac{1}{4}+\frac{2}{3}\cdot\frac{1}{8}+\ldots$

2. $\sum_{n=1}^{\infty}\frac{2+(-1)^n}{n}$;

3. $\sum_{n=2}^{\infty}\frac{1}{n\ln n(\ln\ln n)^2}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n}$

5. $\sum_{n=1}^{\infty}(n+1)x^n$

6. $f(x)=x\cos 3x$ funksiyani x ning darajalari bo'yicha qatorga yoying.

7. $sh\,0,3, \varepsilon = 0,0001$

8. $f(x)=x+1$ funksiyani $(-1;1]$ yarim intervalda Fur'e qatoriga yoying.

9. $\int_0^1 dy\int_{-\sqrt{y}}^0 f dx+\int_1^2 dy\int_{-\sqrt{2-y}}^0 f dx.$

10. $\int_{-2}^{-1}\int_1^{3+x}\frac{\ln y}{y(x+3)}dxdy$

$\iiint_V 25y^2 dxdydz$:

11. $(V):\begin{cases} x=15,\ \ 3y+z=1; \\ x=0,\ y=0,\ z=0. \end{cases}$

12. $I=\int_\gamma (x+z)dl$, buyerda γ egrichiziqparametriktenglamalaribilanberilgan:

$x=2at\sqrt{1-t^2}, y=a\cdot\ln(1-t^2), z=2at^2, 0\le t\le 1/2.$

13. $I=\int_{A\breve{B}} ydx-xdy$, buyerda $A\breve{B}$ yoy $x^2+y^2=1$ aylananing $A(-\frac{1}{\sqrt{2}};-\frac{1}{\sqrt{2}})$ nuqtasidan $B(\frac{1}{\sqrt{2}};\frac{1}{\sqrt{2}})$ nuqtasigachasoatmillariharakatiyo'nalishidao'tiladi.

15 – variant

1. $\frac{1}{1\cdot 3\cdot 5}+\frac{1}{3\cdot 5\cdot 7}+\frac{1}{5\cdot 7\cdot 9}+\frac{1}{7\cdot 9\cdot 11}+\ldots$

2. $\sum_{n=1}^{\infty}\frac{1}{2^n}\cdot\left(1+\frac{1}{n}\right)^{n^2}$;

3. $\sum_{n=2}^{\infty}\frac{1}{n\ln n(\ln\ln n)^3}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n}{n^2+1}$

5. $\sum_{n=1}^{\infty}\frac{(x)^n}{2^n}$

6. $f(x)=\frac{1}{\sqrt{4-x^2}}$funksiyani Makloren qatoriga yoying.

7. $ch\,0{,}3,\varepsilon=0{,}0001$

8. $f(x)=\cos^2 x$ funksiyani $[-\pi;\ \pi]$ da Fur'e qatoriga yoying.

9. $\int_0^1 dy\int_{-y}^{0} f dx+\int_1^{\sqrt{2}} dy\int_{-\sqrt{2-y^2}}^{0} f dx.$

10. $\iint_D (x^2+y^2)dxdy,\ D: x=0, x=1, y=0, y=x^2$

$\iiint_V \frac{dxdydz}{(1+\frac{x}{2}+\frac{y}{4}+\frac{z}{6})^4}:$

11. $(V):\begin{cases}\frac{x}{2}+\frac{y}{4}+\frac{z}{6}=1;\\ x=0, y=0, z=0.\end{cases}$

12. $I=\int_\gamma (x+z)dl$, buyerda γ:

$x^2+y^2+z^2=R^2,\ y=x$ aylanayoyining

$A(0;0;R), B(R/2;R/2;R\sqrt{2})$

nuqtalarorasidagikichikqismi.

13. $I=\int_\gamma zdx-xdy+ydz$, buyerda γ vintchizig'ining

$A(a;0;0)$ nuqtadan $B(a;\ 0;\ 2\pi c)$

gachabo'lganbiro'ramdir:

$x=a\cos t,\ y=b\sin t,\ z=ct, 0\le t\le 2\pi$.

16 – variant

1. $\frac{1}{1\cdot 2}+\frac{1}{2\cdot 3}+\frac{1}{3\cdot 4}+\cdots+\frac{1}{n(n+1)}+\cdots$

2. $\sum_{n=2}^{\infty}\frac{1}{n\sqrt{\ln n}}$;

3. $\sum_{n=2}^{\infty}\frac{1}{n\ln n(\ln\ln n)^4}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n^2}{3^n}$

5. $\sum_{n=1}^{\infty}\frac{(x-1)^n}{2^n}$

6. $f(x)=\ln(10+x)$ funksiyani $x_0=1$ nuqta atrofida Teylor qatoriga yoying.

7. $sh\,0{,}5, \varepsilon=0{,}0001$

8. $f(x)=\sin^2 x$ funksiyani $[-\pi;\ \pi]$ da Fur'e qatoriga yoying.

9. $\int_0^1 dy\int_0^{y^3} f dx+\int_1^2 dy\int_0^{2-y} f dx.$

10. $\iint_D (x+2y)dxdy,\ D: y=x^2, y=5x-6$

$\iiint_V (8y+12z)dxdydz:$

11. $(V):\begin{cases}y=x,\ y=0,\ x=1;\\ z=3x^2+2y^2,\ z=0.\end{cases}$

12. $I=\int_\gamma (x+z)dl$, buyerda γ- uchlari$O(0;0)$ va$A(4;3)$ nuqtalarnitutashtiruvchito'g'richiziqkesmasi.

13. $I=\int_\gamma (x-y)dx+(2x+y)dy$, buyerda γ- uchlari$A(1;1), B(3;3), C(3;-1)$ nuqtalarnitutashtiruvchiuchburchakkonturi.

17 – variant

1. $\frac{1}{1\cdot 3\cdot 5}+\frac{1}{3\cdot 5\cdot 7}+\cdots+\frac{1}{(2n-1)(2n+1)(2n+3)}+\cdots$

2. $\sum_{n=1}^{\infty}\ln\frac{n^3+1}{n^3}$;

3. $\sum_{n=2}^{\infty}\frac{1}{n\ln n(\ln\ln n)^5}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n-lnn}$

5. $\sum_{n=1}^{\infty}\frac{(x)^n}{n}$

6. $f(x)=\arcsin(x)$funksiyani x ning darajalari bo'yicha qatorga yoying.

7. $sh\,0,37,\varepsilon=0,0001$

8. $f(x)=5x-4$ funksiyani $[-\pi;\ \pi]$ da Fur'e qatoriga yoying.

9. $\int_0^{\sqrt{3}}dx\int_{\sqrt{4-x^2}-2}^{0}fdy+\int_{\sqrt{3}}^{2}dx\int_{-\sqrt{4-x^2}}^{0}fdy$

10. $\iint_D e^{x+\cos y}dxdy,\ D:x=0,x=\pi,y=0,y=\frac{\pi}{2}$

$\iiint_V(x+yz)dxdydz:$

11. $(V):\begin{cases}y=x,\ y=0,\ x=1;\\ z=30x^2+60y^2,\ z=0.\end{cases}$

12. $I=\int_\gamma\frac{dl}{\sqrt{8-x^2-y^2}}$, buyerda γ- uchlari$O(0;0)$ va$A(2;2)$ nuqtalarnitutashtiruvchito'g'richiziqkesmasi.

13. $I=\int_\gamma ydx-xdy$, buyerda γ- astroida $x^{2/3}+y^{2/3}=a^{2/3}$ning$A(a;0)$ dan$B(0;a)$ gachabo'lganyoy.

18 – variant

1. $1+\frac{m-1}{m}+\left(\frac{m-1}{m}\right)^2+\cdots+\left(\frac{m-1}{m}\right)^n+\cdots$

2. $\sum_{n=1}^{\infty}\left(\frac{2n^2+1}{3n^2+5}\right)^n$

3. $\sum_{n=2}^{\infty}\frac{1}{n\ln n(\ln\ln n)^6}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n-1}{6n+5}$

5. $\sum_{n=1}^{\infty}\frac{(x)^n}{n}$

6. $f(x)=\ln(1+x)$ funksiyani $x_0=1$ nuqta atrofida Teylor qatoriga yoying.

7. $th\,0,3,\varepsilon=0,0001$

8. $f(x)=\begin{cases}-4, agar\ -\pi\le x<0\ bo'lsa,\\ 4,\ agar\ 0\le x\le\pi\ bo'lsa.\end{cases}$ Ushbu funksiyani Fur'e qatoriga yoying.

9. $\int_{-2}^{-1}dy\int_{-(2+y)}^{0}fdx+\int_{-1}^{0}dy\int_{\sqrt[3]{y}}^{0}fdx$

10. $\iint_D x\sin(x+y)dxdy,\ D:x=0,x=\pi,y=0,y=\frac{\pi}{2}$

$\iiint_V\frac{dxdydz}{(1+\frac{x}{6}+\frac{y}{4}+\frac{z}{16})^2}:$

11. $(V):\begin{cases}\frac{x}{6}+\frac{y}{4}+\frac{z}{16}=1;\\ x=0,y=0,z=0.\end{cases}$

12. $I=\int_\gamma ydl$, buyerda γ: $y^2=2\sqrt{3}x$ parabolaning $x^2=2\sqrt{3}y$ parabola bilankesilganbo'lagi.

13. $I=\int_\gamma xdx+ydy+zdz$, buyerda γ: $A(a;0;0)$ dan $B(a;\ 0;2\pi b)$ gachabo'lgan $x=a\cos t,\ y=a\sin t,\ z=bt, 0\le t\le 2\pi$ vintchizig'iningo'rami.

19 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+6n+5}$

2. $\sum_{n=1}^{\infty}\frac{n}{2^n}$

3. $\sum_{n=2}^{\infty}\frac{1}{n^{\alpha}\ln^{\beta} n}$

4. $\sum_{n=1}^{\infty}\frac{sinn\alpha}{n^3}$

5. $\sum_{n=1}^{\infty}(nx)^n$

6. $f(x)=\frac{5}{6+x-x^2}$ funksiyani Makloren qatoriga yoying.

7. $th\,0,3,\varepsilon=0,0001$

8. $f(x)=|x|-2$ funksiyani $[-\pi;\ \pi]$ da Fur'e qatoriga yoying.

9. $\int_0^1 dx\int_0^{x^2} f dy+\int_1^{\sqrt{2}} dx\int_0^{\sqrt{2-x^2}} f dy$

10. $\iint_D \frac{x^2}{y^2}dxdy,\ D:\ xy=1, y=x, x=2$

$\iiint_V y^2 dxdydz$:

11. $(V):\begin{cases} z=10(3x+y),\ y+x=1; \\ x=0,\ y=0,\ z=0. \end{cases}$

12. $I=\int_{\gamma}\sqrt{x^2+y^2}dl$, buyerda γ:

$x^2+y^2=4x$ aylanayoyi.

13. $I=\int_{\gamma}\frac{1}{y}dx+\frac{1}{z}dy+\frac{1}{x}dz$, buyerda γ:

$A(1;1;1)$ va $B(2;\ 4;8)$ dano'tganto'g'richiziqkesmasi.

20 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+4n}$

2. $\sum_{n=1}^{\infty}\left(\frac{2n^2+1}{n^2+1}\right)^{n^2}$

3. $\sum_{n=2}^{\infty}\frac{1}{n^2\ln^2 n}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{\sqrt{n+1}}$

5. $\sum_{n=1}^{\infty}\frac{(2x-3)^n}{2n-1}$

6. $f(x)=\frac{1-e^x}{x}$ funksiyani x ning darajalari bo'yicha qatorga yoying.

7. $cth\,0,3,\varepsilon=0,0001$

8. $f(x)=x^2-x$ funksiyani $[-2;\ 2]$ da Fur'e qatoriga yoying.

9. $\int_{-2}^{2} dx\int_{\frac{x^2}{4}}^{1} f dy$

$\iint_D e^x y dxdy,\ D:\ x=0,\ x=2, y=1,\ y=e^x$

10. $\iiint_V (5x+\frac{3}{2}z)dxdydz$:

11. $(V):\begin{cases} y=x,\ y=0,\ x=1; \\ z=x^2+15y^2,\ z=0. \end{cases}$

12. $I=\int_{\gamma} xydl$, buyerda γ: $3x+4y=12$ to'g'richiziqningkoordinatao'qlariorasidagikesmasi.

13. $I=\int_{\gamma} e^{y-z}dx+e^{z-x}dy+e^{x-y}dz$, buyerda γ: $O(0;0;0)$ bilan $A(1;3;5)$ nibirlashtiruvchikesma.

21 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+4n+3}$

2. $\sum_{n=1}^{\infty}\left(\frac{2n+1}{3n-2}\right)^{n^2}$

3. $\sum_{n=2}^{\infty}\frac{1}{n^2\ln^3 n}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{3^n}{n^3}$

5. $\sum_{n=1}^{\infty}\frac{(2x-3)^n}{2n-1}$

6. $f(x)=\frac{6}{8+2x-x^2}$ funksiyani $x_0=1$ nuqta atrofida Teylor qatoriga yoying.

7. $\arcsin 0,4,\ \varepsilon=0,0001$

8. $f(x)=2x$ funksiyani $(0;1)$ intervalda Fur'e qatoriga yoying.

9. $\int_0^1 dx\int_{-2\sqrt{x}}^{2\sqrt{x}} f dy$

10. $\iint_D (x^2+y^2)dxdy,\ D: x=0, x=1, y=0, y=x^2$

10. $\iiint_V \frac{dxdydz}{(1+\frac{x}{8}+\frac{y}{3}+\frac{z}{5})^2}:$

11. $(V):\begin{cases}\frac{x}{8}+\frac{y}{3}+\frac{z}{5}=1;\\ x=0, y=0, z=0.\end{cases}$

12. $I=\int_\gamma xydl$, buyerda γ: $4x+3y=12$ to'g'richiziqningkoordinatao'qlariorasidagikesmasi.

13. $I=\int_\gamma (y+z)dx+(2+x)dy+(x+y)dz$, buyerda γ-yoy: $x^2+y^2+z^2=25$sferadagi $M(3;4;0)$ bilan $A(0;0;5)$ nibirlashtiruvchikattaaylananingengqisqayoyi.

22 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+n-12}$

2. $\sum_{n=1}^{\infty}\frac{2^{n+1}}{n^n}$

3. $\sum_{n=1}^{\infty}\frac{1}{\sqrt{n+1}}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n+1}{n^2+n+1}$

5. $\sum_{n=1}^{\infty}\frac{n!x^n}{(n+1)^n}$

6. $f(x)=\ln(1+x-12x^2)$funksiyani Makloren qatoriga yoying.

7. $\arcsin 0,6,\ \varepsilon=0,0001$

8. $f(x)=\begin{cases}-2, agar\ -\pi\le x<0\ bo'lsa,\\ 1,\ agar\ 0\le x\le\pi\ bo'lsa.\end{cases}$ Ushbu funksiyani Fur'e qatoriga yoying.

9. $\int_0^4 dx\int_{3x^2}^{12x} f dy$

10. $\iiint_V xdxdydz,\ V: x=0, y=0, y=3, z=0, x+z=2$

11. $\iiint_V 10x^2dxdydz$:

$(V):\begin{cases}y=8,\ \ 3x+5z=1;\\ x=0,\ y=0,\ z=0.\end{cases}$

12. $I=\int_\gamma xy(x+y)dl$, buyerda γ: $x^2+y^2=R^2$ aylananingyuqoriyoyi.

13. $I=\int_\gamma \frac{y}{x}dx+xdy$, buyerda γ: $y=\ln x$ egrichiziqning $A(0;1)$ va $B(e;1)$ nuqtalarorasidagiyoyi.

23 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{9n^2-3n-2}$

2. $\sum_{n=1}^{\infty}\left(\frac{n}{10n+5}\right)^{n^2}$

3. $\sum_{n=1}^{\infty}\frac{1}{\sqrt{3n+4}}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{\sqrt{5n+3}}$

5. $\sum_{n=1}^{\infty}\frac{(x)^n}{(2n-1)!}$

6. $f(x)=2x\cdot\cos^2\frac{x}{2}-x$ funksiyani x ning darajalari bo'yicha qatorga yoying.

7. $\arcsin 0,9,\ \varepsilon=0,0001$

8. $f(x)=\pi-2x\ ,T=2\pi,[-\pi;\ \pi]$. $f(x)$ funksiyani $[0;\ \pi]$ kesmada juft davom ettirib Fur'e qatoriga yoying.

9. $\int_0^{\frac{\pi}{2}}dx\int_0^{\sin x}fdy$

10. $\iiint_V xyzdxdydz,\ V: x=0, y=0, z=0,\ x+z+y=1$

11. $\iiint_V 25(y^2+x)dxdydz$:
$(V):\begin{cases}z=x+3y,\ x+2y=1;\\ x=0, y=0, z=0.\end{cases}$

12. $I=\int_\gamma\sqrt[4]{x^2+y^2}dl$, buyerda γ: $r=a(1+\cos\varphi)$ kardioidayoyi.

13. $I=\int_\gamma(ye^x+2x)dx+e^xdy$, buyerda γ: $y=xe^2$ egrichiziqning $A(0;0)$ va $B(1;e)$ nuqtalarorasidagiyoyi.

24 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{9n^2+9n+20}$

2. $\sum_{n=1}^{\infty}\frac{2n+1}{3^n(n-1)!}$

3. $\sum_{n=1}^{\infty}n^3e^{-n^4}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n^3+4}$

5. $\sum_{n=1}^{\infty}\frac{(n+1)^5x^{2n}}{2n+1}$

6. $f(x)=\sqrt[3]{8-x^3}$ funksiyani Makloren qatoriga yoying.

7. $\arccos 0,4,\ \varepsilon=0,0001$

8. $(x)=\begin{cases}x, agar\ 0\le x<1\ bo'lsa,\\ 2,\ agar\ 1\le x\le 2\ bo'lsa.\end{cases}$ $T=4$, $[0;4]$. $f(x)$ funksiyani $[0;\ 2]$ kesmada juft davom ettirib Fur'e qatoriga yoying.

9. $\int_0^1 dx\int_x^{\sqrt{2-x^2}}fdy$

10. $\iiint_V(x^2+y^2)dxdydz,\ V: z=2, z=\frac{x^2+y^2}{2}$

$\iiint_V\frac{dxdydz}{1+\frac{x}{3}+\frac{y}{2}+\frac{z}{8}}$:

11. $(V):\begin{cases}\frac{x}{3}+\frac{y}{2}+\frac{z}{8}=1;\\ x=0, y=0, z=0.\end{cases}$

12. $I=\int_\gamma y^2dl$, bu yerda γ: $x=a(t-\sin t)$, $y=a(1-\cos t)$, $(0\le t\le 2\pi)$ sikloidaning bir arkasi.

13. $I=\int_\gamma y^2dx+x^2dy$, buyerda γ: $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ ellipsning $A(0;b)$ va $B(a;0)$ nuqtalarorasidagiyoyi.

25 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{4n^2+4n+3}$

2. $\sum_{n=1}^{\infty}\frac{(n!)^2}{2^{n^2}}$

3. $\sum_{n=1}^{\infty}n^4e^{-n^5}$

4. $\sum_{n=1}^{\infty}\frac{cos2n\alpha}{n^2+1}$

5. $\sum_{n=1}^{\infty}\frac{(x+1)^n}{(2n-1)!}$

6. $f(x)=\ln(10+x)$ funksiyani $x_0=0$ nuqta atrofida Teylor qatoriga yoying.

7. $\arccos 0,3,\ \varepsilon=0,0001$

8. $f(x)=3x-2$ funksiyani $(-1;1)$ intervalda Fur'e qatoriga yoying.

9. $\int_0^3 dx\int_{\sqrt{2x-x^2}}^{\sqrt{2x}} fdy$

10. $\iiint_V (x^2+y^2)dxdydz,\ V: x^2+y^2=x, z=0, z^2=2x$

$\iiint_V 4xydxdydz:$

11. $(V):\begin{cases} y=6x,\ y=0,\ x=1; \\ z=3(x^2+2y^2),\ z=0. \end{cases}$

12. $I=\int_\gamma (x^2+y^2+z^2)dl$, buyerda γ:

$x=\cos t,\ y=\sin t,\ z=\sqrt{3}t, (0\le t\le 2\pi)$ vintchizig'iningbirinchio'rami.

13. $I=\int_\gamma xdy-ydx$, buyerda γ: $x^2+y^2=R^2$ aylananingyoyi.

26 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{9n^2+21n+10}$

2. $\sum_{n=1}^{\infty}\frac{10^n\cdot n!}{(2n+1)!}$

3. $\sum_{n=1}^{\infty}n^2e^{-n^3}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n+3}{n^2-9}$

5. $\sum_{n=0}^{\infty}\frac{(x)^n}{2^n\cdot\sqrt{n+1}}$

6. $f(x)=xcos3x$ funksiyani $x_0=3$ ning darajalari bo'yicha qatorga yoying.

7. $\operatorname{arc}tg\,3,\ \varepsilon=0,0001$

8. $f(x)=x^2-1$ funksiyani $(-1;1)$ intervalda Fur'e qatoriga yoying.

9. $\int_0^1 dy\int_{-4y-4}^{-8y^3} fdx$

10. $\iiint_V \frac{dxdydz}{\sqrt{x^2+y^2}},\ V: x^2+y^2=4y, y+z=4, z=0$

$\iiint_V (7x^2+2y)dxdydz:$

11. $(V):\begin{cases} y=20x,\ y=0,\ x=1; \\ z=\sqrt{3xy},\ z=0. \end{cases}$

12. $I=\int_\gamma \frac{x}{3y+z}dl$, buyerda γ:

$x=\frac{t^2}{\sqrt{2}}, y=\frac{t^3}{3}, z=t$ chiziqning $A(0;0;0)$ va $B(\sqrt{2};\frac{2\sqrt{2}}{3};\sqrt{2})$ nuqtalarorasidagiyoyi.

13. $I=\int_\gamma xdy-ydx$, buyerda γ: $y=x^2, x=y^2$ parabolalarorasidagiegrichiziqyoyi.

27 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+9n+20}$

2. $\sum_{n=1}^{\infty}\frac{n^2+1}{(n+2)!}$

3. $\sum_{n=3}^{\infty}\frac{1}{n\ln n\ln(\ln n)}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n-1}{n^2-2n+1}$

5. $\sum_{n=0}^{\infty}\frac{(x-2)^n}{2^n\cdot\sqrt{n+1}}$

6. $f(x)=xsinx$ funksiyani $x_0=1$ ning darajalari bo'yicha qatorga yoying.

7. $\sqrt[5]{1{,}1},\varepsilon=0{,}00001$

8. $f(x)=\begin{cases}-x^2, agar\ -\pi\le x<0\ bo'lsa,\\ 1-x,\ agar\ 0\le x\le\pi\ bo'lsa.\end{cases}$
Ushbu funksiyani Fur'e qatoriga yoying.

9. $\int_1^3 dy\int_0^{2y} fdx$

10. $x=1, y=x, y=2x, z=x^2+y^2, z=x^2+2y^2$

$$\iiint_V \frac{dxdydz}{(1+\frac{x}{15}+\frac{y}{8}+\frac{z}{4})^2}:$$

11. $$(V):\begin{cases}\frac{x}{15}+\frac{y}{8}+\frac{z}{4}=1;\\ x=0, y=0, z=0.\end{cases}$$

$I=\int_\gamma \frac{1}{\sqrt{x^2+y^2+z^2}}dl$, bu yerda γ: $A(1;2)$ va $B(3;6)$ nuqtalarni tutashtiruvchi to'g'ri chiziq kesmasi.

12. $I=\int_\gamma xdy-ydx$, buyerda γ: $x=4\cos^3 t,\ y=4\sin^3 t$ astroidayoyi.

28 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{49n^2+35n-6}$

2. $\sum_{n=1}^{\infty}\frac{(n+3)!}{n^n}$

3. $\sum_{n=3}^{\infty}\frac{1}{n\ln(\ln n)}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n\cdot 3^n}$

5. $\sum_{n=1}^{\infty}\frac{(2x+1)^n}{2n-1}$

6. $f(x)=\frac{1}{\sqrt{9-x^2}}$ funksiyani x ning darajalari bo'yicha qatorga yoying.

7. $\sqrt[3]{2},\varepsilon=0{,}00001$

8. $f(x)=\begin{cases}1, agar\ -1\le x<0\ bo'lsa,\\ -x^2,\ agar\ 0\le x\le 1\ bo'lsa.\end{cases}$
Ushbu funksiyani Fur'e qatoriga yoying.

9. $\int_0^2 dx\int_{\sqrt{2x-x^2}}^{2\sqrt{x}} fdy$

10. $x=0,\ y=0,\ x+2y+z=6$

$$\iiint_V x^2dxdydz:$$

11. $$(V):\begin{cases}y=3,\ \ x+z=1;\\ x=0,\ y=0,\ z=0.\end{cases}$$

12. $I=\int_\gamma ydl$, bu yerda γ: $y^2=4x, x^2=4y$ parabolalar orasidagi egri chiziq yoyi.

13. $I=\int_\gamma xdx+ydy+(x-y+1)dz$, buyerda γ: $A(1;1;1)$ va $B(2;3;4)$ nuqtalarnitutashtiruvchito'g'richiziq.

29 – variant	**30 – variant**
1. $\frac{1}{1\cdot 2\cdot 3}+\frac{1}{2\cdot 3\cdot 4}+\frac{1}{3\cdot 4\cdot 5}+\frac{1}{4\cdot 5\cdot 6}+\ldots$	1. $\frac{1}{1\cdot 4}+\frac{1}{4\cdot 7}+\frac{1}{7\cdot 10}+\frac{1}{10\cdot 13}+\ldots$
2. $\sum_{n=1}^{\infty}\frac{1}{\sqrt[3]{n}+2}$;	2. $\sum_{n=1}^{\infty}\left(1-\frac{1}{n}\right)^{n^2+1}$;
3. $\sum_{n=2}^{\infty}\frac{1}{n\ln^5 n}$	3. $\sum_{n=2}^{\infty}\frac{1}{n\ln^6 n}$
4. $\sum_{n=1}^{\infty}(-1)^n\cdot\frac{1}{n+1}$	4. $\sum_{n=1}^{\infty}(-1)^n\cdot\frac{1}{n\cdot ln\,(n+1)}$
5. $\sum_{n=1}^{\infty}\frac{(2x+1)^n}{2n-1}$	5. $\sum_{n=1}^{\infty}\frac{(n+1)^5x^{2n}}{2n+1}$
6. $f(x)=cos\sqrt{x}$ funksiyani Makloren qatoriga yoying.	6. $f(x)=\frac{3}{2-x-x^2}$ funksiyani x ning darajalari bo'yicha qatorga yoying.
7. $\sqrt{27},\varepsilon=0{,}001$	7. $\sqrt{8},\varepsilon=0{,}001$
8. $f(x)=\pi-x$ funksiyani $(-\pi,\pi]$ da Fur'e qatoriga yoying.	8. $f(x)=\frac{x^2}{2}-1$ funksiyani $[-3;3]$ da Fur'e qatoriga yoying.
9. $\int_0^{\pi/4}dy\int_0^{\sin y}fdx+\int_{\pi/4}^{\pi/2}dy\int_0^{\cos y}fdx.$	9. $\int_{-2}^{-1}dx\int_{-(2+x)}^{0}fdy+\int_{-1}^{0}dx\int_{\sqrt[3]{x}}^{0}fdy$
10. $\int_0^1\int_0^2 xy(x+y)dxdy$	10. $\int_0^1\int_{x^2}^{x} xy^2dxdy$
$\iiint_V(60y+90z)dxdydz$:	$\iiint_V(\frac{10}{3}x+\frac{5}{3})dxdydz$:
11. $(V):\begin{cases}y=4x,\ y=0,\ x=1;\\ z=x^2+y^2,\ z=0.\end{cases}$	11. $(V):\begin{cases}y=9x,\ y=0,\ x=1;\\ z=\sqrt{xy},\ z=0.\end{cases}$
12. $I=\int_{AB}^{\gamma}\frac{dl}{\sqrt{x^2+y^2}}$, buyerda AB-uchlari $A(0;-2)$, $B(4;0)$ nuqtalardaniboratkesma.	12. $I=\int_{\gamma}xydl$, buyerda γ-ushbu $x=0,\ y=0,\ x=4,\ y=2$ to'g'richiziqlardantashkiltopganto'rtburchak konturi.
13. $I=\int_{AB}\cos ydx-\sin xdy$, buyerda AB-kesma: $A(2;-2)$, $B(-2;2)$.	13. $I=\int_{AB}(x^2-y^2)dx+xydy$, buyerda AB-kesma: $A(2;2)$, $B(3;4)$.

31 – variant

1. $\frac{1}{1\cdot 4}+\frac{1}{2\cdot 5}+\frac{1}{3\cdot 6}+\frac{1}{4\cdot 7}+\ldots$

2. $\sum_{n=1}^{\infty}\frac{(3n)!}{(n!)^3 2^{3n}}$;

3. $\sum_{n=2}^{\infty}\frac{1}{n\ln n(\ln\ln n)^{1+\alpha}},(\alpha>0)$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n\cdot 2^n}$

5. $\sum_{n=1}^{\infty}\frac{(x+1)^n}{(2n-1)!}$

6. $f(x)=e^{-2x}$ funksiyani Makloren qatoriga yoying.

7. $\sqrt{24},\varepsilon=0{,}001$

8. $f(x)=1-2x$ funksiyani $[0,1]$ da kosinuslar bo'yicha Fur'e qatoriga yoying.

9. $\int_0^1 dy\int_0^{\sqrt{y}} f dx+\int_1^e dy\int_{\ln y}^1 f dx.$

10. $\int_1^e\int_1^y \frac{y}{x}dxdy$

$\iiint_V (9+18z)dxdydz$:

11. $(V):\begin{cases} y=4x,\ y=0,\ x=1;\\ z=\sqrt{xy},\ z=0.\end{cases}$

12. $I=\int_\gamma \frac{dl}{x^2+y^2+4}$, buyerda γ-uchlari $O(0;0)$, $A(1;2)$ nuqtalardaniboratkesma.

13. $I=\int_{AB}(4x+y)dx+(x+4y)dy$, buyerda $A\breve{B}$ yoy $y=x^4$ egrichiziqningyoyi: $A(1;1)$ va $B(-1;1)$.

32 – variant

1. $\frac{2}{3}+\frac{2}{3}\cdot\frac{1}{2}+\frac{2}{3}\cdot\frac{1}{4}+\frac{2}{3}\cdot\frac{1}{8}+\ldots$

2. $\sum_{n=1}^{\infty}\frac{2+(-1)^n}{n}$;

3. $\sum_{n=2}^{\infty}\frac{1}{n\ln n(\ln\ln n)^2}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n}$

5. $\sum_{n=1}^{\infty}(n+1)x^n$

6. $f(x)=x\cos 3x$ funksiyani x ning darajalari bo'yicha qatorga yoying.

7. $sh\,0{,}3,\ \varepsilon=0{,}0001$

8. $f(x)=x+1$ funksiyani $(-1;1]$ yarim intervalda Fur'e qatoriga yoying.

9. $\int_0^1 dy\int_{-\sqrt{y}}^0 f dx+\int_1^2 dy\int_{-\sqrt{2-y}}^0 f dx.$

10. $\int_{-2}^{-1}\int_1^{3+x}\frac{\ln y}{y(x+3)}dxdy$

$\iiint_V 25y^2 dxdydz$:

11. $(V):\begin{cases} x=15,\ \ 3y+z=1;\\ x=0,\ y=0,\ z=0.\end{cases}$

2. 12. $I=\int_\gamma (x+z)dl$, buyerda γ egrichiziqparametriktenglamalaribilanberilgan:
$x=2at\sqrt{1-t^2}$, $y=a\cdot\ln(1-t^2)$, $z=2at^2$, $0\le t\le 1$

13. $I=\int_{A\breve{B}} ydx-xdy$, buyerda $A\breve{B}$ yoy $x^2+y^2=1$ aylananing $A(-\frac{1}{\sqrt{2}};-\frac{1}{\sqrt{2}})$ nuqtasidan $B(\frac{1}{\sqrt{2}};\frac{1}{\sqrt{2}})$ nuqtasigachasoatmillariharakatiyo'nalishidao'tiladi.

33 – variant

1. $\frac{1}{1\cdot 3\cdot 5}+\frac{1}{3\cdot 5\cdot 7}+\frac{1}{5\cdot 7\cdot 9}+\frac{1}{7\cdot 9\cdot 11}+\ldots$

2. $\sum_{n=1}^{\infty}\frac{1}{2^n}\cdot\left(1+\frac{1}{n}\right)^{n^2}$;

3. $\sum_{n=2}^{\infty}\frac{1}{n\ln n(\ln\ln n)^3}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n}{n^2+1}$

5. $\sum_{n=1}^{\infty}\frac{(x)^n}{2^n}$

6. $f(x)=\frac{1}{\sqrt{4-x^2}}$funksiyani Makloren qatoriga yoying.

7. $ch\,0,3,\varepsilon=0,0001$

8. $f(x)=\cos^2 x$ funksiyani $[-\pi;\ \pi]$ da Fur'e qatoriga yoying.

9. $\int_0^1 dy\int_{-y}^{0} f dx+\int_1^{\sqrt{2}} dy\int_{-\sqrt{2-y^2}}^{0} f dx.$

10. $\iint_D (x^2+y^2)dxdy,\ D: x=0, x=1, y=0, y=x^2$

$\iiint_V \frac{dxdydz}{(1+\frac{x}{2}+\frac{y}{4}+\frac{z}{6})^4}:$

11. $(V):\begin{cases}\frac{x}{2}+\frac{y}{4}+\frac{z}{6}=1;\\ x=0, y=0, z=0.\end{cases}$

12. $I=\int_{\gamma}(x+z)dl$, buyerda γ:

$x^2+y^2+z^2=R^2,\ y=x$aylanayoyining $A(0;0;R), B(R/2;R/2;R\sqrt{2})$ nuqtalarorasidagikichikqismi.

13. $I=\int_{\gamma} zdx-xdy+ydz$, buyerda γ vintchizig'ining $A(a;0;0)$ nuqtadan $B(a;\ 0;2\pi c)$ gachabo'lganbiro'ramdir:

$x=a\cos t,\ y=b\sin t,\ z=ct, 0\le t\le 2\pi$.

34 – variant

1. $\frac{1}{1\cdot 2}+\frac{1}{2\cdot 3}+\frac{1}{3\cdot 4}+\cdots+\frac{1}{n(n+1)}+\cdots$

2. $\sum_{n=2}^{\infty}\frac{1}{n\sqrt{\ln n}}$;

3. $\sum_{n=2}^{\infty}\frac{1}{n\ln n(\ln\ln n)^4}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n^2}{3^n}$

5. $\sum_{n=1}^{\infty}\frac{(x-1)^n}{2^n}$

6. $f(x)=\ln(10+x)$ funksiyani $x_0=1$ nuqta atrofida Teylor qatoriga yoying.

7. $sh\,0,5,\varepsilon=0,0001$

8. $f(x)=\sin^2 x$ funksiyani $[-\pi;\ \pi]$ da Fur'e qatoriga yoying.

9. $\int_0^1 dy\int_0^{y^3} f dx+\int_1^2 dy\int_0^{2-y} f dx.$

10. $\iint_D (x+2y)dxdy,\ D: y=x^2, y=5x-6$

$\iiint_V (8y+12z)dxdydz:$

11. $(V):\begin{cases}y=x,\ y=0,\ x=1;\\ z=3x^2+2y^2,\ z=0.\end{cases}$

12. $I=\int_{\gamma}(x+z)dl$, bu yerda γ- uchlari $O(0;0)$ va $A(4;3)$ nuqtalarni tutashtiruvchi to'g'ri chiziq kesmasi.

13. $I=\int_{\gamma}(x-y)dx+(2x+y)dy$, bu yerda γ - uchlari $A(1;1), B(3;3), C(3;-1)$ nuqtalarni tutashtiruvchi uchburchak konturi.

35 – variant

1. $\frac{1}{1\cdot3\cdot5}+\frac{1}{3\cdot5\cdot7}+\cdots+\frac{1}{(2n-1)(2n+1)(2n+3)}+\cdots$

2. $\sum_{n=1}^{\infty}\ln\frac{n^3+1}{n^3}$;

3. $\sum_{n=2}^{\infty}\frac{1}{n\ln n(\ln\ln n)^5}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n-lnn}$

5. $\sum_{n=1}^{\infty}\frac{(x)^n}{n}$

6. $f(x)=\arcsin(x)$funksiyani x ning darajalari bo'yicha qatorga yoying.

7. $sh\,0,37,\varepsilon=0,0001$

8. $f(x)=5x-4$ funksiyani $[-\pi;\ \pi]$ da Fur'e qatoriga yoying.

9. $\int_0^{\sqrt{3}}dx\int_{-2}^{\sqrt{4-x^2}}fdy+\int_{\sqrt{3}}^{2}dx\int_{-\sqrt{4-x^2}}^{0}fdy$

10. $\iint_D e^{x+\cos y}dxdy,\ D:x=0,x=\pi,y=0,y=\frac{\pi}{2}$

$\iiint_V(x+yz)dxdydz$:

11. $(V):\begin{cases}y=x,\ y=0,\ x=1;\\ z=30x^2+60y^2,\ z=0.\end{cases}$

12. $I=\int_{\gamma}\frac{dl}{\sqrt{8-x^2-y^2}}$, bu yerda γ- uchlari $O(0;0)$ va $A(2;2)$ nuqtalarni tutashtiruvchi to'g'ri chiziq kesmasi.

13. $I=\int_{\gamma}ydx-xdy$, bu yerda γ- astroida $x^{2/3}+y^{2/3}=a^{2/3}$ ning $A(a;0)$ dan $B(0;a)$ gacha bo'lgan yoy.

36 – variant

1. $1+\frac{m-1}{m}+\left(\frac{m-1}{m}\right)^2+\cdots+\left(\frac{m-1}{m}\right)^n+\cdots$

2. $\sum_{n=1}^{\infty}\left(\frac{2n^2+1}{3n^2+5}\right)^n$

3. $\sum_{n=2}^{\infty}\frac{1}{n\ln n(\ln\ln n)^6}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n-1}{6n+5}$

5. $\sum_{n=1}^{\infty}\frac{(x)^n}{n}$

6. $f(x)=\ln(1+x)$ funksiyani $x_0=1$ nuqta atrofida Teylor qatoriga yoying.

7. $th\,0,3,\varepsilon=0,0001$

8. $f(x)=\begin{cases}-4, agar\ -\pi\le x<0\ bo'lsa,\\ 4,\ agar\ 0\le x\le\pi\ bo'lsa.\end{cases}$ Ushbu funksiyani Fur'e qatoriga yoying.

9. $\int_{-2}^{-1}dy\int_{-(2+y)}^{0}fdx+\int_{-1}^{0}dy\int_{\sqrt[3]{y}}^{0}fdx$

10. $\iint_D x\sin(x+y)dxdy,\ D:x=0,x=\pi,y=0,y=\frac{\pi}{2}$

$\iiint_V\frac{dxdydz}{(1+\frac{x}{6}+\frac{y}{4}+\frac{z}{16})^2}$:

11. $(V):\begin{cases}\frac{x}{6}+\frac{y}{4}+\frac{z}{16}=1;\\ x=0,y=0,z=0.\end{cases}$

12. $I=\int_{\gamma}ydl$, bu yerda γ: $y^2=2\sqrt{3}x$ parabolaning $x^2=2\sqrt{3}y$ parabola bilan kesilgan bo'lagi.

13. $I=\int_{\gamma}xdx+ydy+zdz$, bu yerda γ: $A(a;0;0)$ dan $B(a;\ 0;2\pi b)$ gacha bo'lgan $x=a\cos t,\ y=a\sin t,\ z=bt,0\le t\le 2\pi$ vint chizig'ining o'rami.

37 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+6n+5}$

2. $\sum_{n=1}^{\infty}\frac{n}{2^n}$

3. $\sum_{n=2}^{\infty}\frac{1}{n^{\alpha}\ln^{\beta}n}$

4. $\sum_{n=1}^{\infty}\frac{sinn\alpha}{n^3}$

5. $\sum_{n=1}^{\infty}(nx)^n$

6. $f(x)=\frac{5}{6+x-x^2}$ funksiyani Makloren qatoriga yoying.

7. $th\,0,3,\varepsilon=0,0001$

8. $f(x)=|x|-2$ funksiyani $[-\pi;\ \pi]$ da Fur'e qatoriga yoying.

9. $\int_0^1 dx\int_0^{x^2} fdy+\int_1^{\sqrt{2}} dx\int_0^{\sqrt{2-x^2}} fdy$

10. $\iint_D \frac{x^2}{y^2}dxdy,\ D: xy=1, y=x, x=2$

$\iiint_V y^2 dxdydz:$

11. $(V):\begin{cases} z=10(3x+y),\ y+x=1; \\ x=0,\ y=0,\ z=0. \end{cases}$

12. $I=\int_{\gamma}\sqrt{x^2+y^2}dl,$ bu yerda γ:

$x^2+y^2=4x$ aylana yoyi.

13. $I=\int_{\gamma}\frac{1}{y}dx+\frac{1}{z}dy+\frac{1}{x}dz,$ bu yerda γ:

$A(1;1;1)$ va $B(2;\ 4;8)$ dan o'tgan to'g'ri chiziq kesmasi.

38 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+4n}$

2. $\sum_{n=1}^{\infty}\left(\frac{2n^2+1}{n^2+1}\right)^{n^2}$

3. $\sum_{n=2}^{\infty}\frac{1}{n^2\ln^2 n}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{\sqrt{n+1}}$

5. $\sum_{n=1}^{\infty}\frac{(2x-3)^n}{2n-1}$

6. $f(x)=\frac{1-e^x}{x}$ funksiyani x ning darajalari bo'yicha qatorga yoying.

7. $cth\,0,3,\varepsilon=0,0001$

8. $f(x)=x^2-x$ funksiyani $[-2;\ 2]$ da Fur'e qatoriga yoying.

9. $\int_{-2}^{2} dx\int_{\frac{x^2}{4}}^{1} fdy$

$\iint_D e^x y dxdy,\ D: x=0,\ x=2, y=1,\ y=e^x$

10. $\iiint_V (5x+\frac{3}{2}z)dxdydz:$

11. $(V):\begin{cases} y=x,\ y=0,\ x=1; \\ z=x^2+15y^2,\ z=0. \end{cases}$

12. $I=\int_{\gamma} xydl,$ bu yerda γ: $3x+4y=12$ to'g'ri chiziqning koordinata o'qlari orasidagi kesmasi.

13. $I=\int_{\gamma} e^{y-z}dx+e^{z-x}dy+e^{x-y}dz,$ bu yerda γ: $O(0;0;0)$ bilan $A(1;3;5)$ ni birlashtiruvchi kesma.

39 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+4n+3}$

2. $\sum_{n=1}^{\infty}\left(\frac{2n+1}{3n-2}\right)^{n^2}$

3. $\sum_{n=2}^{\infty}\frac{1}{n^2\ln^3 n}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{3^n}{n^3}$

5. $\sum_{n=1}^{\infty}\frac{(2x-3)^n}{2n-1}$

6. $f(x)=\frac{6}{8+2x-x^2}$ funksiyani $x_0=1$ nuqta atrofida Teylor qatoriga yoying.

7. $\arcsin 0,4$, $\varepsilon=0,0001$

8. $f(x)=2x$ funksiyani $(0;1)$ intervalda Fur'e qatoriga yoying.

9. $\int_0^1 dx\int_{-2\sqrt{x}}^{2\sqrt{x}} f dy$

10. $\iint_D (x^2+y^2)dxdy,\ D: x=0, x=1, y=0, y=x^2$

11. $\iiint_V \frac{dxdydz}{(1+\frac{x}{8}+\frac{y}{3}+\frac{z}{5})^2}$:

$$(V):\begin{cases}\frac{x}{8}+\frac{y}{3}+\frac{z}{5}=1;\\ x=0, y=0, z=0.\end{cases}$$

12. $I=\int_\gamma xydl$, bu yerda γ: $4x+3y=12$ to'g'ri chiziqning koordinata o'qlari orasidagi kesmasi.

13. $I=\int_\gamma (y+z)dx+(2+x)dy+(x+y)dz$, bu yerda γ-yoy: $x^2+y^2+z^2=25$ sferadagi $M(3;4;0)$ bilan $A(0;0;5)$ ni birlashtiruvchi katta aylananing eng qisqa yoyi.

40 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+n-12}$

2. $\sum_{n=1}^{\infty}\frac{2^{n+1}}{n^n}$

3. $\sum_{n=1}^{\infty}\frac{1}{\sqrt{n+1}}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n+1}{n^2+n+1}$

5. $\sum_{n=1}^{\infty}\frac{n!x^n}{(n+1)^n}$

6. $f(x)=\ln(1+x-12x^2)$ funksiyani Makloren qatoriga yoying.

7. $\arcsin 0,6$, $\varepsilon=0,0001$

8. $f(x)=\begin{cases}-2, agar\ -\pi\le x<0\ bo'lsa,\\ 1,\ agar\ 0\le x\le\pi\ bo'lsa.\end{cases}$

Ushbu funksiyani Fur'e qatoriga yoying.

9. $\int_0^4 dx\int_{3x^2}^{12x} f dy$

10. $\iiint_V xdxdydz,\ V: x=0, y=0, y=3, z=0, x+z=2$

11. $\iiint_V 10x^2dxdydz$:

$$(V):\begin{cases}y=8,\ \ 3x+5z=1;\\ x=0,\ y=0,\ z=0.\end{cases}$$

12. $I=\int_\gamma xy(x+y)dl$, bu yerda γ: $x^2+y^2=R^2$ aylananing yuqori yoyi.

13. $I=\int_\gamma \frac{y}{x}dx+xdy$, bu yerda γ: $y=\ln x$ egri chiziqning $A(0;1)$ va $B(e;1)$ nuqtalar orasidagi yoyi.

41 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{9n^2-3n-2}$

2. $\sum_{n=1}^{\infty}\left(\frac{n}{10n+5}\right)^{n^2}$

3. $\sum_{n=1}^{\infty}\frac{1}{\sqrt{3n+4}}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{\sqrt{5n+3}}$

5. $\sum_{n=1}^{\infty}\frac{(x)^n}{(2n-1)!}$

6. $f(x)=2x\cdot\cos^2\frac{x}{2}-x$ funksiyani x ning darajalari bo'yicha qatorga yoying.

7. $\arcsin 0,9,\ \varepsilon=0,0001$

8. $f(x)=\pi-2x\ ,T=2\pi,[-\pi;\ \pi]$. $f(x)$ funksiyani $[0;\ \pi]$ kesmada juft davom ettirib Fur'e qatoriga yoying.

9. $\int_0^{\frac{\pi}{2}}dx\int_0^{\sin x}fdy$

10. $\iiint_V xyzdxdydz,\ V: x=0, y=0, z=0,\ x+z+y=1$

11. $\iiint_V 25(y^2+x)dxdydz$:

$$(V):\begin{cases}z=x+3y,\ x+2y=1;\\ x=0,\ y=0,\ z=0.\end{cases}$$

12. $I=\int_{\gamma}\sqrt[4]{x^2+y^2}dl,$ bu yerda γ: $r=a(1+\cos\varphi)$ kardioida yoyi.

13. $I=\int_{\gamma}(ye^x+2x)dx+e^xdy,$ bu yerda γ: $y=xe^2$ egri chiziqning $A(0;0)$ va $B(1;e)$ nuqtalar orasidagi yoyi.

42 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{9n^2+9n+20}$

2. $\sum_{n=1}^{\infty}\frac{2n+1}{3^n(n-1)!}$

3. $\sum_{n=1}^{\infty}n^3e^{-n^4}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n^3+4}$

5. $\sum_{n=1}^{\infty}\frac{(n+1)^5x^{2n}}{2n+1}$

6. $f(x)=\sqrt[3]{8-x^3}$ funksiyani Makloren qatoriga yoying.

7. $\arccos 0,4,\ \varepsilon=0,0001$

8. $(x)=\begin{cases}x, agar\ 0\le x<1\ bo'lsa,\\ 2,\ agar\ 1\le x\le 2\ bo'lsa.\end{cases}$ $T=4$, $[0;4]$. $f(x)$ funksiyani $[0;\ 2]$ kesmada juft davom ettirib Fur'e qatoriga yoying.

9. $\int_0^1 dx\int_x^{\sqrt{2-x^2}}fdy$

10. $\iiint_V(x^2+y^2)dxdydz,\ V: z=2, z=\frac{x^2+y^2}{2}$

$$\iiint_V\frac{dxdydz}{1+\frac{x}{3}+\frac{y}{2}+\frac{z}{8}}:$$

11. $$(V):\begin{cases}\frac{x}{3}+\frac{y}{2}+\frac{z}{8}=1;\\ x=0,y=0,z=0.\end{cases}$$

12. $I=\int_{\gamma}y^2dl,$ bu yerda γ: $x=a(t-\sin t),\ y=a(1-\cos t),(0\le t\le 2\pi)$ sikloidaning bir arkasi.

13. $I=\int_{\gamma}y^2dx+x^2dy,$ bu yerda γ: $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ ellipsning $A(0;b)$ va $B(a;0)$ nuqtalar orasidagi yoyi.

43 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{4n^2+4n+3}$

2. $\sum_{n=1}^{\infty}\frac{(n!)^2}{2^{n^2}}$

3. $\sum_{n=1}^{\infty}n^4e^{-n^5}$

4. $\sum_{n=1}^{\infty}\frac{cos2n\alpha}{n^2+1}$

5. $\sum_{n=1}^{\infty}\frac{(x+1)^n}{(2n-1)!}$

6. $f(x)=\ln(10+x)$ funksiyani $x_0=0$ nuqta atrofida Teylor qatoriga yoying.

7. $\arccos 0,3,\ \varepsilon=0,0001$

8. $f(x)=3x-2$ funksiyani $(-1;1)$ intervalda Fur'e qatoriga yoying.

9. $\int_0^3 dx\int_{\sqrt{2x-x^2}}^{\sqrt{2x}} fdy$

10. $\iiint_V (x^2+y^2)dxdydz,\ V: x^2+y^2=x, z=0, z^2=2x$

$\iiint_V 4xydxdydz:$

11. $(V):\begin{cases} y=6x,\ y=0,\ x=1; \\ z=3(x^2+2y^2),\ z=0. \end{cases}$

12. $I=\int_\gamma (x^2+y^2+z^2)dl,$ bu yerda γ: $x=\cos t,\ y=\sin t,\ z=\sqrt{3}t, (0\le t\le 2\pi)$ vint chizig'ining birinchi o'rami.

13. $I=\int_\gamma xdy-ydx,$ bu yerda γ: $x^2+y^2=R^2$ aylananing yoyi.

44 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{9n^2+2\ln+10}$

2. $\sum_{n=1}^{\infty}\frac{10^n\cdot n!}{(2n+1)!}$

3. $\sum_{n=1}^{\infty}n^2e^{-n^3}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n+3}{n^2-9}$

5. $\sum_{n=0}^{\infty}\frac{(x)^n}{2^n\cdot\sqrt{n+1}}$

6. $f(x)=xcos3x$ funksiyani $x_0=3$ ning darajalari bo'yicha qatorga yoying.

7. $\operatorname{arc}tg\,3,\ \varepsilon=0,0001$

8. $f(x)=x^2-1$ funksiyani $(-1;1)$ intervalda Fur'e qatoriga yoying.

9. $\int_0^1 dy\int_{-4y-4}^{-8y^3} fdx$

10. $\iiint_V \frac{dxdydz}{\sqrt{x^2+y^2}},\ V: x^2+y^2=4y, y+z=4, z=0$

$\iiint_V (7x^2+2y)dxdydz:$

11. $(V):\begin{cases} y=20x,\ y=0,\ x=1; \\ z=\sqrt{3xy},\ z=0. \end{cases}$

12. $I=\int_\gamma \frac{x}{3y+z}dl,$ bu yerda γ: $x=\frac{t^2}{\sqrt{2}}, y=\frac{t^3}{3}, z=t$ chiziqning $A(0;0;0)$ va $B(\sqrt{2};\frac{2\sqrt{2}}{3};\sqrt{2})$ nuqtalar orasidagi yoyi.

13. $I=\int_\gamma xdy-ydx,$ bu yerda γ: $y=x^2, x=y^2$ parabolalar orasidagi egri chiziq yoyi.

45 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+9n+20}$

2. $\sum_{n=1}^{\infty}\frac{n^2+1}{(n+2)!}$

3. $\sum_{n=3}^{\infty}\frac{1}{n\ln n\ln(\ln n)}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n-1}{n^2-2n+1}$

5. $\sum_{n=0}^{\infty}\frac{(x-2)^n}{2^n\cdot\sqrt{n+1}}$

6. $f(x)=xsinx$ funksiyani $x_0=1$ ning darajalari bo'yicha qatorga yoying.

7. $\sqrt[5]{1{,}1},\varepsilon=0{,}00001$

8. $f(x)=\begin{cases}-x^2, agar\ -\pi\le x<0\ bo'lsa,\\ 1-x,\ agar\ 0\le x\le\pi\ bo'lsa.\end{cases}$
Ushbu funksiyani Fur'e qatoriga yoying.

9. $\int_1^3 dy\int_0^{2y} fdx$

10. $x=1, y=x, y=2x, z=x^2+y^2, z=x^2+2y^2$

$$\iiint_V \frac{dxdydz}{(1+\frac{x}{15}+\frac{y}{8}+\frac{z}{4})^2}:$$

11. $$(V):\begin{cases}\frac{x}{15}+\frac{y}{8}+\frac{z}{4}=1;\\ x=0, y=0, z=0.\end{cases}$$

$I=\int_\gamma \frac{1}{\sqrt{x^2+y^2+z^2}}dl$, bu yerda γ: $A(1;2)$ va

12. $B(3;6)$ nuqtalarni tutashtiruvchi to'g'ri chiziq kesmasi.

13. $I=\int_\gamma xdy-ydx$, bu yerda γ: $x=4\cos^3 t,\ y=4\sin^3 t$ astroida yoyi.

46 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{49n^2+35n-6}$

2. $\sum_{n=1}^{\infty}\frac{(n+3)!}{n^n}$

3. $\sum_{n=3}^{\infty}\frac{1}{n\ln(\ln n)}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n\cdot 3^n}$

5. $\sum_{n=1}^{\infty}\frac{(2x+1)^n}{2n-1}$

6. $f(x)=\frac{1}{\sqrt{9-x^2}}$ funksiyani x ning darajalari bo'yicha qatorga yoying.

7. $\sqrt[3]{2},\varepsilon=0{,}00001$

8. $f(x)=\begin{cases}1, agar\ -1\le x<0\ bo'lsa,\\ -x^2,\ agar\ 0\le x\le 1\ bo'lsa.\end{cases}$
Ushbu funksiyani Fur'e qatoriga yoying.

9. $\int_0^2 dx\int_{\sqrt{2x-x^2}}^{2\sqrt{x}} fdy$

10. $x=0,\ y=0,\ x+2y+z=6$

$$\iiint_V x^2dxdydz:$$

11. $$(V):\begin{cases}y=3,\ \ x+z=1;\\ x=0,\ y=0,\ z=0.\end{cases}$$

12. $I=\int_\gamma ydl$, bu yerda γ: $y^2=4x, x^2=4y$ parabolalar orasidagi egri chiziq yoyi.

13. $I=\int_\gamma xdx+ydy+(x-y+1)dz$, bu yerda γ: $A(1;1;1)$ va $B(2;3;4)$ nuqtalarni tutashtiruvchi to'g'ri chiziq.

47 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+6n+5}$

2. $\sum_{n=1}^{\infty}\frac{n}{2^n}$

3. $\sum_{n=2}^{\infty}\frac{1}{n^{\alpha}\ln^{\beta}n}$

4. $\sum_{n=1}^{\infty}\frac{sinn\alpha}{n^3}$

5. $\sum_{n=1}^{\infty}(nx)^n$

6. $f(x)=\frac{5}{6+x-x^2}$ funksiyani Makloren qatoriga yoying.

7. $th\,0,3,\varepsilon=0,0001$

8. $f(x)=|x|-2$ funksiyani $[-\pi;\ \pi]$ da Fur'e qatoriga yoying.

9. $\int_0^1 dx\int_0^{x^2} fdy+\int_1^{\sqrt{2}} dx\int_0^{\sqrt{2-x^2}} fdy$

10. $\iint_D \frac{x^2}{y^2}dxdy,\ D: xy=1, y=x, x=2$

$\iiint_V y^2 dxdydz$:

11. $(V):\begin{cases} z=10(3x+y),\ y+x=1; \\ x=0,\ y=0,\ z=0. \end{cases}$

12. $I=\int_{\gamma}\sqrt{x^2+y^2}dl,$ bu yerda γ:

$x^2+y^2=4x$ aylana yoyi.

13. $I=\int_{\gamma}\frac{1}{y}dx+\frac{1}{z}dy+\frac{1}{x}dz,$ bu yerda γ:

$A(1;1;1)$ va $B(2;\ 4;8)$ dan o'tgan to'g'ri chiziq kesmasi.

48 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+4n}$

2. $\sum_{n=1}^{\infty}\left(\frac{2n^2+1}{n^2+1}\right)^{n^2}$

3. $\sum_{n=2}^{\infty}\frac{1}{n^2\ln^2 n}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{\sqrt{n+1}}$

5. $\sum_{n=1}^{\infty}\frac{(2x-3)^n}{2n-1}$

6. $f(x)=\frac{1-e^x}{x}$ funksiyani x ning darajalari bo'yicha qatorga yoying.

7. $cth\,0,3,\varepsilon=0,0001$

8. $f(x)=x^2-x$ funksiyani $[-2;\ 2]$ da Fur'e qatoriga yoying.

9. $\int_{-2}^{2} dx\int_{\frac{x^2}{4}}^{1} fdy$

$\iint_D e^x y dxdy,\ D: x=0,\ x=2, y=1,\ y=e^x$

10.

$\iiint_V (5x+\frac{3}{2}z)dxdydz$:

11. $(V):\begin{cases} y=x,\ y=0,\ x=1; \\ z=x^2+15y^2,\ z=0. \end{cases}$

12. $I=\int_{\gamma} xydl,$ bu yerda γ: $3x+4y=12$ to'g'ri chiziqning koordinata o'qlari orasidagi kesmasi.

13. $I=\int_{\gamma} e^{y-z}dx+e^{z-x}dy+e^{x-y}dz,$ bu yerda γ: $O(0;0;0)$ bilan $A(1;3;5)$ ni birlashtiruvchi kesma.

49 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+4n+3}$

2. $\sum_{n=1}^{\infty}\left(\frac{2n+1}{3n-2}\right)^{n^2}$

3. $\sum_{n=2}^{\infty}\frac{1}{n^2\ln^3 n}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{3^n}{n^3}$

5. $\sum_{n=1}^{\infty}\frac{(2x-3)^n}{2n-1}$

6. $f(x)=\frac{6}{8+2x-x^2}$ funksiyani $x_0=1$ nuqta atrofida Teylor qatoriga yoying.

7. $\arcsin 0,4,\ \varepsilon=0,0001$

8. $f(x)=2x$ funksiyani $(0;1)$ intervalda Fur'e qatoriga yoying.

9. $\int_0^1 dx\int_{-2\sqrt{x}}^{2\sqrt{x}} f dy$

10. $\iint_D (x^2+y^2)dxdy,\ D: x=0, x=1, y=0, y=x^2$

$$\iiint_V \frac{dxdydz}{(1+\frac{x}{8}+\frac{y}{3}+\frac{z}{5})^2}:$$

11. $$(V):\begin{cases}\frac{x}{8}+\frac{y}{3}+\frac{z}{5}=1;\\ x=0, y=0, z=0.\end{cases}$$

12. $I=\int_{\gamma} xydl$, bu yerda γ: $4x+3y=12$ to'g'ri chiziqning koordinata o'qlari orasidagi kesmasi.

13. $I=\int_{\gamma}(y+z)dx+(2+x)dy+(x+y)dz$, bu yerda γ-yoy: $x^2+y^2+z^2=25$ sferadagi $M(3;4;0)$ bilan $A(0;0;5)$ ni birlashtiruvchi katta aylananing eng qisqa yoyi.

50 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+n-12}$

2. $\sum_{n=1}^{\infty}\frac{2^{n+1}}{n^n}$

3. $\sum_{n=1}^{\infty}\frac{1}{\sqrt{n+1}}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n+1}{n^2+n+1}$

5. $\sum_{n=1}^{\infty}\frac{n!x^n}{(n+1)^n}$

6. $f(x)=\ln(1+x-12x^2)$ funksiyani Makloren qatoriga yoying.

7. $\arcsin 0,6,\ \varepsilon=0,0001$

8. $f(x)=\begin{cases}-2, agar\ -\pi\le x<0\ bo'lsa,\\ 1,\ agar\ 0\le x\le\pi\ bo'lsa.\end{cases}$ Ushbu funksiyani Fur'e qatoriga yoying.

9. $\int_0^4 dx\int_{3x^2}^{12x} f dy$

10. $\iiint_V xdxdydz,\ V: x=0, y=0, y=3, z=0, x+z=2$

11. $\iiint_V 10x^2dxdydz$:

$$(V):\begin{cases}y=8,\ 3x+5z=1;\\ x=0,\ y=0,\ z=0.\end{cases}$$

12. $I=\int_{\gamma} xy(x+y)dl$, bu yerda γ: $x^2+y^2=R^2$ aylananing yuqori yoyi.

13. $I=\int_{\gamma}\frac{y}{x}dx+xdy$, bu yerda γ: $y=\ln x$ egri chiziqning $A(0;1)$ va $B(e;1)$ nuqtalar orasidagi yoyi.

51– variant

1. $\sum_{n=1}^{\infty}\frac{1}{9n^2-3n-2}$

2. $\sum_{n=1}^{\infty}\left(\frac{n}{10n+5}\right)^{n^2}$

3. $\sum_{n=1}^{\infty}\frac{1}{\sqrt{3n+4}}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{\sqrt{5n+3}}$

5. $\sum_{n=1}^{\infty}\frac{(x)^n}{(2n-1)!}$

6. $f(x)=2x\cdot\cos^2\frac{x}{2}-x$ funksiyani x ning darajalari bo'yicha qatorga yoying.

7. $\arcsin 0,9,\ \varepsilon=0,0001$

8. $f(x)=\pi-2x\ ,T=2\pi,[-\pi;\ \pi]$. $f(x)$ funksiyani $[0;\ \pi]$ kesmada juft davom ettirib Fur'e qatoriga yoying.

9. $\int_0^{\frac{\pi}{2}}dx\int_0^{\sin x}fdy$

10. $\iiint_V xyzdxdydz,\ V: x=0, y=0, z=0,\ x+z+y=1$

11. $\iiint_V 25(y^2+x)dxdydz$:

$$(V):\begin{cases}z=x+3y,\ x+2y=1;\\ x=0,\ y=0,\ z=0.\end{cases}$$

12. $I=\int_\gamma\sqrt[4]{x^2+y^2}dl,$ bu yerda γ: $r=a(1+\cos\varphi)$ kardioida yoyi.

13. $I=\int_\gamma(ye^x+2x)dx+e^xdy,$ bu yerda γ: $y=xe^2$ egri chiziqning $A(0;0)$ va $B(1;e)$ nuqtalar orasidagi yoyi.

52– variant

1. $\sum_{n=1}^{\infty}\frac{1}{9n^2+9n+20}$

2. $\sum_{n=1}^{\infty}\frac{2n+1}{3^n(n-1)!}$

3. $\sum_{n=1}^{\infty}n^3e^{-n^4}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n^3+4}$

5. $\sum_{n=1}^{\infty}\frac{(n+1)^5x^{2n}}{2n+1}$

6. $f(x)=\sqrt[3]{8-x^3}$ funksiyani Makloren qatoriga yoying.

7. $\arccos 0,4,\ \varepsilon=0,0001$

8. $(x)=\begin{cases}x, agar\ 0\le x<1\ bo'lsa,\\ 2,\ agar\ 1\le x\le 2\ bo'lsa.\end{cases}$ $T=4$, $[0;4]$. $f(x)$ funksiyani $[0;\ 2]$ kesmada juft davom ettirib Fur'e qatoriga yoying.

9. $\int_0^1 dx\int_x^{\sqrt{2-x^2}}fdy$

10. $\iiint_V(x^2+y^2)dxdydz,\ V: z=2, z=\frac{x^2+y^2}{2}$

$$\iiint_V\frac{dxdydz}{1+\frac{x}{3}+\frac{y}{2}+\frac{z}{8}}:$$

11. $$(V):\begin{cases}\frac{x}{3}+\frac{y}{2}+\frac{z}{8}=1;\\ x=0,y=0,z=0.\end{cases}$$

12. $I=\int_\gamma y^2dl,$ bu yerda γ: $x=a(t-\sin t),\ y=a(1-\cos t),(0\le t\le 2\pi)$ sikloidaning bir arkasi.

13. $I=\int_\gamma y^2dx+x^2dy,$ bu yerda γ: $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ ellipsning $A(0;b)$ va $B(a;0)$ nuqtalar orasidagi yoyi.

53 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{4n^2+4n+3}$

2. $\sum_{n=1}^{\infty}\frac{(n!)^2}{2^{n^2}}$

3. $\sum_{n=1}^{\infty}n^4e^{-n^5}$

4. $\sum_{n=1}^{\infty}\frac{cos2n\alpha}{n^2+1}$

5. $\sum_{n=1}^{\infty}\frac{(x+1)^n}{(2n-1)!}$

6. $f(x)=\ln(10+x)$ funksiyani $x_0=0$ nuqta atrofida Teylor qatoriga yoying.

7. $\arccos 0,3,\ \varepsilon=0,0001$

8. $f(x)=3x-2$ funksiyani $(-1;1)$ intervalda Fur'e qatoriga yoying.

9. $\int_0^3 dx\int_{\sqrt{2x-x^2}}^{\sqrt{2x}} fdy$

10. $\iiint_V (x^2+y^2)dxdydz,\ V: x^2+y^2=x, z=0, z^2=2x$

$\iiint_V 4xydxdydz$:

11. $(V):\begin{cases} y=6x,\ y=0,\ x=1; \\ z=3(x^2+2y^2),\ z=0. \end{cases}$

12. $I=\int_\gamma (x^2+y^2+z^2)dl$, bu yerda γ: $x=\cos t,\ y=\sin t,\ z=\sqrt{3}t, (0\le t\le 2\pi)$ vint chizig'ining birinchi o'rami.

13. $I=\int_\gamma xdy-ydx$, bu yerda γ: $x^2+y^2=R^2$ aylananing yoyi.

54 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{9n^2+21n+10}$

2. $\sum_{n=1}^{\infty}\frac{10^n\cdot n!}{(2n+1)!}$

3. $\sum_{n=1}^{\infty}n^2e^{-n^3}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n+3}{n^2-9}$

5. $\sum_{n=0}^{\infty}\frac{(x)^n}{2^n\cdot\sqrt{n+1}}$

6. $f(x)=xcos3x$ funksiyani $x_0=3$ ning darajalari bo'yicha qatorga yoying.

7. $\arctg 3,\ \varepsilon=0,0001$

8. $f(x)=x^2-1$ funksiyani $(-1;1)$ intervalda Fur'e qatoriga yoying.

9. $\int_0^1 dy\int_{-4y-4}^{-8y^3} fdx$

10. $\iiint_V \frac{dxdydz}{\sqrt{x^2+y^2}},\ V: x^2+y^2=4y, y+z=4, z=0$

11. $\iiint_V (7x^2+2y)dxdydz$:

$(V):\begin{cases} y=20x,\ y=0,\ x=1; \\ z=\sqrt{3xy},\ z=0. \end{cases}$

12. $I=\int_\gamma \frac{x}{3y+z}dl$, bu yerda γ: $x=\frac{t^2}{\sqrt{2}}, y=\frac{t^3}{3}, z=t$ chiziqning $A(0;0;0)$ va $B(\sqrt{2};\frac{2\sqrt{2}}{3};\sqrt{2})$ nuqtalar orasidagi yoyi.

13. $I=\int_\gamma xdy-ydx$, bu yerda γ: $y=x^2, x=y^2$ parabolalar orasidagi egri chiziq yoyi.

55 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{n^2+9n+20}$

2. $\sum_{n=1}^{\infty}\frac{n^2+1}{(n+2)!}$

3. $\sum_{n=3}^{\infty}\frac{1}{n\ln n\ln(\ln n)}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{n-1}{n^2-2n+1}$

5. $\sum_{n=0}^{\infty}\frac{(x-2)^n}{2^n\cdot\sqrt{n+1}}$

6. $f(x)=xsinx$ funksiyani $x_0=1$ ning darajalari bo'yicha qatorga yoying.

7. $\sqrt[5]{1{,}1},\varepsilon=0{,}00001$

8. $f(x)=\begin{cases}-x^2, agar\ -\pi\le x<0\ bo'lsa,\\ 1-x,\ agar\ 0\le x\le\pi\ bo'lsa.\end{cases}$
Ushbu funksiyani Fur'e qatoriga yoying.

9. $\int_1^3 dy\int_0^{2y} fdx$

10. $x=1, y=x, y=2x, z=x^2+y^2, z=x^2+2y^2$

$$\iiint_V \frac{dxdydz}{(1+\frac{x}{15}+\frac{y}{8}+\frac{z}{4})^2}:$$

11. $$(V):\begin{cases}\frac{x}{15}+\frac{y}{8}+\frac{z}{4}=1;\\ x=0, y=0, z=0.\end{cases}$$

$$I=\int_\gamma \frac{1}{\sqrt{x^2+y^2+z^2}}dl,$$ bu yerda γ: $A(1;2)$

12. va $B(3;6)$ nuqtalarni tutashtiruvchi to'g'ri chiziq kesmasi.

13. $I=\int_\gamma xdy-ydx$, bu yerda γ:

$x=4\cos^3 t,\ y=4\sin^3 t$ astroida yoyi.

56 – variant

1. $\sum_{n=1}^{\infty}\frac{1}{49n^2+35n-6}$

2. $\sum_{n=1}^{\infty}\frac{(n+3)!}{n^n}$

3. $\sum_{n=3}^{\infty}\frac{1}{n\ln(\ln n)}$

4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n\cdot 3^n}$

5. $\sum_{n=1}^{\infty}\frac{(2x+1)^n}{2n-1}$

6. $f(x)=\frac{1}{\sqrt{9-x^2}}$ funksiyani x ning darajalari bo'yicha qatorga yoying.

7. $\sqrt[3]{2},\varepsilon=0{,}00001$

8. $f(x)=\begin{cases}1, agar\ -1\le x<0\ bo'lsa,\\ -x^2,\ agar\ 0\le x\le 1\ bo'lsa.\end{cases}$
Ushbu funksiyani Fur'e qatoriga yoying.

9. $\int_0^2 dx\int_{\sqrt{2x-x^2}}^{2\sqrt{x}} fdy$

10. $x=0, y=0, x+2y+z=6$

$$\iiint_V x^2dxdydz:$$

11. $$(V):\begin{cases}y=3,\ \ x+z=1;\\ x=0,\ y=0,\ z=0.\end{cases}$$

12. $I=\int_\gamma ydl$, bu yerda γ: $y^2=4x, x^2=4y$ parabolalar orasidagi egri chiziq yoyi.

13. $I=\int_\gamma xdx+ydy+(x-y+1)dz$, bu yerda γ: $A(1;1;1)$ va $B(2;3;4)$ nuqtalarni tutashtiruvchi to'g'ri chiziq.

57 – variant	**58 – variant**
1. $\frac{1}{1\cdot 2\cdot 3}+\frac{1}{2\cdot 3\cdot 4}+\frac{1}{3\cdot 4\cdot 5}+\frac{1}{4\cdot 5\cdot 6}+\ldots$	1. $\frac{1}{1\cdot 4}+\frac{1}{4\cdot 7}+\frac{1}{7\cdot 10}+\frac{1}{10\cdot 13}+\ldots$
2. $\sum_{n=1}^{\infty}\frac{1}{\sqrt[3]{n}+2}$;	2. $\sum_{n=1}^{\infty}\left(1-\frac{1}{n}\right)^{n^2+1}$;
3. $\sum_{n=2}^{\infty}\frac{1}{n\ln^5 n}$	3. $\sum_{n=2}^{\infty}\frac{1}{n\ln^6 n}$
4. $\sum_{n=1}^{\infty}(-1)^n\cdot\frac{1}{n+1}$	4. $\sum_{n=1}^{\infty}(-1)^n\cdot\frac{1}{n\cdot ln\,(n+1)}$
5. $\sum_{n=1}^{\infty}\frac{(2x+1)^n}{2n-1}$	5. $\sum_{n=1}^{\infty}\frac{(n+1)^5x^{2n}}{2n+1}$
6. $f(x)=cos\sqrt{x}$ funksiyani Makloren qatoriga yoying.	6. $f(x)=\frac{3}{2-x-x^2}$ funksiyani x ning darajalari bo'yicha qatorga yoying.
7. $\sqrt{27},\varepsilon=0,001$	7. $\sqrt{8},\varepsilon=0,001$
8. $f(x)=\pi-x$ funksiyani $(-\pi,\pi]$ da Fur'e qatoriga yoying.	8. $f(x)=\frac{x^2}{2}-1$ funksiyani $[-3;3]$ da Fur'e qatoriga yoying.
9. $\int_0^{\pi/4}dy\int_0^{\sin y}fdx+\int_{\pi/4}^{\pi/2}dy\int_0^{\cos y}fdx.$	9. $\int_{-2}^{-1}dx\int_{-(2+x)}^{0}fdy+\int_{-1}^{0}dx\int_{\sqrt[3]{x}}^{0}fdy$
10. $\int_0^1\int_0^2 xy(x+y)dxdy$	10. $\int_0^1\int_{x^2}^{x} xy^2dxdy$
$\iiint_V(60y+90z)dxdydz$:	$\iiint_V(\frac{10}{3}x+\frac{5}{3})dxdydz$:
11. $(V):\begin{cases}y=4x,\ y=0,\ x=1;\\ z=x^2+y^2,\ z=0.\end{cases}$	11. $(V):\begin{cases}y=9x,\ y=0,\ x=1;\\ z=\sqrt{xy},\ z=0.\end{cases}$
12. $I=\int_{AB}\frac{dl}{\sqrt{x^2+y^2}}$, bu yerda AB-uchlari $A(0;-2)$, $B(4;0)$ nuqtalardan iborat kesma.	12. $I=\int_{\gamma}xydl$, bu yerda γ-ushbu $x=0, y=0, x=4, y=2$ to'g'ri chiziqlardan tashkil topgan to'rtburchak konturi.
13. $I=\int_{AB}\cos ydx-\sin xdy$, bu yerda AB-kesma: $A(2;-2)$, $B(-2;2)$.	13. $I=\int_{AB}(x^2-y^2)dx+xydy$, bu yerda AB-kesma: $A(2;2)$, $B(3;4)$.

59 – variant

1. $\frac{1}{1\cdot 4}+\frac{1}{2\cdot 5}+\frac{1}{3\cdot 6}+\frac{1}{4\cdot 7}+\ldots$
2. $\sum_{n=1}^{\infty}\frac{(3n)!}{(n!)^3 2^{3n}}$;
3. $\sum_{n=2}^{\infty}\frac{1}{n\ln n(\ln\ln n)^{1+\alpha}},(\alpha>0)$
4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n\cdot 2^n}$
5. $\sum_{n=1}^{\infty}\frac{(x+1)^n}{(2n-1)!}$
6. $f(x)=e^{-2x}$ funksiyani Makloren qatoriga yoying.
7. $\sqrt{24},\varepsilon=0{,}001$
8. $f(x)=1-2x$ funksiyani $[0,1]$ da kosinuslar bo'yicha Fur'e qatoriga yoying.
9. $\int_0^1 dy\int_0^{\sqrt{y}} f dx+\int_1^e dy\int_{\ln y}^1 f dx.$
10. $\int_1^e\int_1^y \frac{y}{x}dxdy$

$\iiint_V (9+18z)dxdydz$:

11. $(V):\begin{cases} y=4x,\ y=0,\ x=1; \\ z=\sqrt{xy},\ z=0. \end{cases}$
12. $I=\int_\gamma \frac{dl}{x^2+y^2+4}$, bu yerda γ- uchlari $O(0;0)$, $A(1;2)$ nuqtalardan iborat kesma.
13. $I=\int_{AB}(4x+y)dx+(x+4y)dy,$ bu yerda $A\breve{B}$ yoy $y=x^4$ egri chiziqning yoyi: $A(1;1)$ va $B(-1;1)$.

60 – variant

1. $\frac{2}{3}+\frac{2}{3}\cdot\frac{1}{2}+\frac{2}{3}\cdot\frac{1}{4}+\frac{2}{3}\cdot\frac{1}{8}+\ldots$
2. $\sum_{n=1}^{\infty}\frac{2+(-1)^n}{n}$;
3. $\sum_{n=2}^{\infty}\frac{1}{n\ln n(\ln\ln n)^2}$
4. $\sum_{n=1}^{\infty}(-1)^{n+1}\cdot\frac{1}{n}$
5. $\sum_{n=1}^{\infty}(n+1)x^n$
6. $f(x)=x\cos 3x$ funksiyani x ning darajalari bo'yicha qatorga yoying.
7. $sh\,0{,}3,\varepsilon=0{,}0001$
8. $f(x)=x+1$ funksiyani $(-1;1]$ yarim intervalda Fur'e qatoriga yoying.
9. $\int_0^1 dy\int_{-\sqrt{y}}^0 f dx+\int_1^2 dy\int_{-\sqrt{2-y}}^0 f dx.$
10. $\int_{-2}^{-1}\int_1^{3+x}\frac{\ln y}{y(x+3)}dxdy$

$\iiint_V 25y^2 dxdydz.$

11. $(V):\begin{cases} x=15,\ 3y+z=1; \\ x=0,\ y=0,\ z=0. \end{cases}$

3. 12. $I=\int_\gamma (x+z)dl,$ bu yerda γ egri chiziq parametrik tenglamalari bilan berilgan: $x=2at\sqrt{1-t^2},\ y=a\cdot\ln(1-t^2),\ z=2at^2,0\le t\le 1/2.$
13. $I=\int_{A\breve{B}} ydx-xdy,$ bu yerda $A\breve{B}$ yoy $x^2+y^2=1$ aylananing $A(-\frac{1}{\sqrt{2}};-\frac{1}{\sqrt{2}})$ nuqtasidan $B(\frac{1}{\sqrt{2}};\frac{1}{\sqrt{2}})$ nuqtasigacha soat millari harakati yo'nalishida o'tiladi.

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