Вариант № 1.

1. $4xdx - 3ydy = 3x^2 ydy - 2xy^2 dx$
2. $y' = \frac{y2}{x2} + 4\frac{y}{x} + 2$
3. $y' = \frac{x + 2y - 3}{2x - 2}$
4. $y' - \frac{y}{x} = x^2,\ y(1) = 0$
5. $y' + xy = (1+x)e^{-x} y^2,\ y(0) = 1$
6. $3x^2 e^y dx + (x^3 e^y - 1)dy = 0$
7. $y'''x \ln x = y''$
8. $4y^3 y'' = y^4 - 1;$ $y(0) = \sqrt{2};\ y'(0) = 1/(2\sqrt{2})$
9. $y''' + 3y'' + 2y' = 1 - x^2$
10. $y''' - 4y'' + 5y' - 2y = (16 - 12x)e^{-x}$
11. $y'' + 2y' = 4e^x(\sin x + \cos x)$
12. $y'' - 2y' = 2ch2x$

Вариант № 2.

1. $\sqrt{4 + y^2}\,dx - ydy = x^2 ydy$
2. $xy' = \frac{3y^3 + 2yx^2}{2y^2 + x^2}$
3. $y' = \frac{x + y - 2}{2x - 2}$
4. $y' - y\,ctgx = 2x\sin x,\ y(\frac{\pi}{2}) = 0$
5. $xy' + y = 2y^2 \ln x,\ y(1) = 1/2$
6. $(3x^2 + \frac{2}{y}\cos\frac{2x}{y})dx - \frac{2x}{y^2}\cos\frac{2x}{y}dy = 0$
7. $xy''' + y'' = 1$
8. $y'' = 128y^3;\ y(0) = 1;\ y'(0) = 8$
9. $y''' - y'' = 6x^2 + 3x$
10. $y''' - 3y'' + 2y' = (1 - 2x)e^x$
11. $y'' - 4y' + 4y = -e^{2x}\sin 6x$
12. $y'' + y = 2\sin x - 6\cos x = 2e^x$

Вариант № 3.

1. $6x\,dx - 6y\,dy = 2x^2 y\,dy - 3xy^2 dx$
2. $y' = \frac{x + y}{x - y}$
3. $y' = \frac{3y - x - 4}{3x + 3}$
4. $y' + y\cos x = \frac{1}{2}\sin 2x,\ y(0) = 0$
5. $2(xy' + y) = xy^2,\ y(1) = 2$
6. $(3x^2 + 4y^2)dx + (8xy + e^y)dy = 0$
7. $2xy''' = y''$
8. $y^3 y'' + 64 = 0;\ y(0) = 4;\ y'(0) = 2$
9. $y''' - y' = x^2 + x$
10. $y''' - y'' - y' + y = (3x + 7)e^{2x}$
11. $y'' + 2y' = -2e^x(\sin x + \cos x)$
12. $y''' - y' = 2e^x + \cos x$

Вариант № 4.

1. $\sqrt{3+y^2}\,dx - ydy = x^2 ydy$
2. $xy' = \sqrt{x^2+y^2} + y$
3. $y' = \dfrac{2y-2}{x+y-2}$
4. $y' + y\,tgx = \cos^2 x,\ \ y(\dfrac{\pi}{4}) = \dfrac{1}{2}$
5. $y' + 4x^3 y = 4(1+x^3)e^{-4x} y^2,\ y(0) = 1$
6. $(2x - 1 - \dfrac{y}{x^2})dx - (2y - \dfrac{1}{x})dy = 0$
7. $xy''' + y'' = x + 1$
8. $y'' + 2\sin y \cos^3 y = 0;\ y(0) = 0;\ y'(0) = 1$
9. $y^{IV} - 3y''' + 3y'' - y' = 2x$
10. $y''' - 2y'' + y' = (2x+5)e^{2x}$
11. $y'' + y = 2\cos 7x + 3\sin 7x$
12. $y'' - 3y' = 2ch\,3x$

Вариант № 5.

1. $x\sqrt{3+y^2}\,dx + y\sqrt{2+x^2}\,dy = 0$
2. $2y' = \dfrac{y^2}{x^2} + 6\dfrac{y}{x} + 3$
3. $y' = \dfrac{x+y-2}{3x-y-2}$
4. $y' - \dfrac{y}{x+2} = x^2 + 2x,\ \ y(-1) = \dfrac{3}{2}$
5. $xy' - y = -y^2(\ln x + 2)\ln x,\ y(1) = 1$
6. $(y^2 + y\sec^2 x)dx + (2xy + tgx)dy = 0$
7. $\mathrm{tg}\,x\,y'' - y' + \dfrac{1}{\sin x} = 0$
8. $y'' = 32\sin^3 y \cos y;\ y(1) = \pi/2;\ y'(1) = 4$
9. $y^{IV} - y''' = 5(x+2)^2$
10. $y''' - 3y'' + 4y = (18x - 21)e^{-x}$
11. $y'' + 2y' + 5y = -\sin 2x$
12. $y'' + 4y = -8\,sin\,2x + 32\,cos\,2x + 4e^{2x}$

Вариант № 6.

1. $x\sqrt{1+y^2} + yy'\sqrt{1+x^2} = 0$
2. $xy' = \dfrac{3y^3 + 4yx^2}{2y^2 + 2x^2}$
3. $y' = \dfrac{2x+y-3}{x-1}$
4. $y' - \dfrac{1}{x+1}y = e^x(x+1),\ \ y(0) = 1$
5. $2(y' + xy) = (1+x)e^{-x} y^2,\ y(0) = 2$
6. $(3x^2 y + 2y + 3)dx + (x^3 + 2x + 3y^2)dy = 0$
7. $x^2 y'' + xy' = 1$
8. $y'' = 98y^3;\ y(1) = 1;\ y'(1) = 7$
9. $y^{IV} - 2y''' + y'' = 2x(1-x)$
10. $y''' - 5y'' + 8y' - 4y = (2x-5)e^x$
11. $y'' - y' + 8y = e^x(5\sin x - 3\cos x)$
12. $y''' - y' = 10\,sin\,x + 6\,cos\,x + 4e^x$

Вариант № 7.

1. $(e^{2x} + 5)dy + ye^{2x}dx = 0$
2. $y' = \dfrac{x+2y}{2x-y}$
3. $y' = \dfrac{x+7y-8}{9x-y-8}$
4. $y' - \dfrac{y}{x} = x\sin x,\ \ y(\dfrac{\pi}{2}) = 1$
5. $3(xy' + y) = y^2 \ln x,\ y(1) = 3$
6. $\left(\dfrac{x}{\sqrt{x^2+y^2}} + \dfrac{1}{x} + \dfrac{1}{y}\right)dx + \left(\dfrac{y}{\sqrt{x^2+y^2}} + \dfrac{1}{y} - \dfrac{x}{y^2}\right)dy = 0$
7. $y'''\,\mathrm{ctg}\,2x + 2y'' = 0$
8. $y^3 y'' + 49 = 0;\ y(3) = -7;\ y'(3) = -1$
9. $y^{IV} + y''' + y'' = x^2 + x - 1$
10. $y''' - 4y'' + 4y' = (x-1)e^x$
11. $y'' + 2y' = e^x(\sin x + \cos x)$
12. $y'' - 4y' = 16ch\,4x$

Вариант № 8.

1. $6xdx-6ydy=3x^2ydy-2xy^2dx$
2. $xy'=2\sqrt{x^2+y^2}+y$
3. $y'=\dfrac{x+3y+4}{3x-6}$
4. $y'+\dfrac{y}{x}=\sin x,\ \ y(\pi)=\dfrac{1}{\pi}$
5. $2y'+y\cos x=y^{-1}\cos x(1+\sin x),\ y(0)=1$
6. $[\sin 2x-2\cos(x+y)]dx-2\cos(x+y)dy=0$
7. $x^3y'''+x^2y''=1$
8. $4y^3y''=16y^4-1;\ y(0)=\sqrt{2}/2;\ y'(0)=1/\sqrt{2}$
9. $y^{V}-y^{IV}=2x+3$
10. $y'''+2y''+y'=(18x+21)e^{2x}$
11. $y''-4y'+4y=e^{2x}\sin 3x$
12. $y''+9y=-18\,sin\,3x-18e^{3x}$

Вариант № 9.

1. $x\sqrt{5+y^2}dx+y\sqrt{4+x^2}dy=0$
2. $3y'=\dfrac{y^2}{x^2}+8\dfrac{y}{x}+4$
3. $y'=\dfrac{3y+3}{2x+y-1}$
4. $y'+\dfrac{y}{2x}=x^2,\ \ y(1)=1$
5. $y'+4x^3y=4y^2e^{4x}(1-x^3),\ y(0)=-1$
6. $(xy^2+x/y^2)dx+(x^2y-x^2/y^3)dy=0$
7. $y'''\operatorname{tg}x=2y''$
8. $y''+8\sin y\cos^3 y=0;\ y(0)=0;\ y'(0)=2$
9. $3y^{IV}+y'''=6x-1$
10. $y'''-3y'-2y=4xe^x$
11. $y''+6y'+13y=e^{-3x}\cos 4x$
12. $y'''-4y'=24e^{2x}-4cos\,2x+8sin\,2x$

Вариант № 10.

1. $y(4+e^x)dy-e^xdx=0$
2. $xy'=\dfrac{3y^3+6yx^2}{2y^2+3x^2}$
3. $y'=\dfrac{x+2y-3}{4x-y-3}$
4. $y'+\dfrac{2x}{1+x^2}y=\dfrac{2x^2}{1+x^2},\ \ y(0)=\dfrac{2}{3}$
5. $3y'+2xy=2xy^{-2}e^{-2x^2},\ y(0)=-1$
6. $(\dfrac{1}{x^2}+\dfrac{3y^2}{x^4})dx-\dfrac{2y}{x^3}dy=0$
7. $y'''\operatorname{cth}2x=2y''$
8. $y''=72y^3;\ y(2)=1;\ y'(2)=6$
9. $y^{IV}+2y'''+y''=4x^2$
10. $y'''-3y'-2y=-4xe^x$
11. $y''+y=2\cos 3x-3\sin 3x$
12. $y''-5y'=50ch\,5x$

Вариант № 11.

1. $\sqrt{4-x^2}y'+xy^2+x=0$
2. $y'=\dfrac{x^2+xy-y^2}{x^2-2xy}$
3. $y'=\dfrac{x-2y+3}{-2x-2}$
4. $y'-\dfrac{2x-5}{x^2}y=5,\ \ y(2)=4$
5. $2xy'-3y=-(5x^2+3)y^3,\ y(1)=1/\sqrt{2}$
6. $\left(\dfrac{x}{\sqrt{x^2+y^2}}+y\right)dx+\left(x+\dfrac{y}{\sqrt{x^2+y^2}}\right)dy=0$
7. $x^4y''+x^3y'=1$
8. $y^3y''+36=0;\ y(0)=3;\ y'(0)=2$
9. $y'''+y''=5x^2-1$
10. $y'''-3y'+2y=(4x+9)e^{2x}$
11. $y''+2y'+5y=-2\sin x$
12. $y''+16y=16\,cos\,4x-16e^{4x}$

Вариант № 12.

1. $2xdx - 2ydy = x^2 ydy - 2xy^2 dx$
2. $xy' = \sqrt{2x^2 + y^2} + y$
3. $y' = \dfrac{x + 8y - 9}{10x - y - 9}$
4. $y' + \dfrac{y}{x} = \dfrac{x+1}{x} e^x, \ y(1) = e$
5. $3xy' + 5y = (4x - 5)y^4, \ y(1) = 1$
6. $\dfrac{y}{x^2} \cos\dfrac{y}{x} dx - (\dfrac{1}{x} \cos\dfrac{y}{x} + 2y)dy = 0$
7. $xy''' + 2y'' = 0$
8. $y'' = 18\sin^3 y \cos y; \ y(1) = \pi/2; \ y'(1) = 3$
9. $y^{IV} + 4y''' + 4y'' = x - x^2$
10. $y''' + 4y'' + 5y' + 2y = (12x + 16)e^x$
11. $y'' - 4y' + 8y = e^x(-3\sin x + 4\cos x)$
12. $y''' - 9y' = -9e^{3x} - 9\cos 3x + 18\sin 3x$

Вариант № 13.

1. $x\sqrt{4 + y^2} dx + y\sqrt{1 + x^2} dy = 0$
2. $2y' = \dfrac{y^2}{x^2} + 6\dfrac{y}{x} + 6$
3. $y' = \dfrac{2x + 3y - 5}{5x - 5}$
4. $y' - \dfrac{y}{x} = -2\dfrac{\ln x}{x}, \ y(1) = 1$
5. $2y' + 3y\cos x = e^{2x}(2 + 3\cos x)y^{-1}, \ y(0) = 1$
6. $\dfrac{1 + xy}{x^2 y} dx + \dfrac{1 - xy}{xy^2} dy = 0$
7. $(1 + x^2)y'' + 2xy' = x^3$
8. $4y^3 y'' = y^4 - 16; \ y(0) = 2\sqrt{2}; \ y'(0) = 1/\sqrt{2}$
9. $7y''' - y'' = 12x$
10. $y''' - y'' - 2y' = (6x - 11)e^{-x}$
11. $y'' + 2y' = 10e^x(\sin x + \cos x)$
12. $y'' - y' = 2ch\,x$

Вариант № 14.

1. $(e^x + 8)dy - ye^x dx = 0$
2. $xy' = \dfrac{3y^3 + 8yx^2}{2y^2 + 4x^2}$
3. $y' = \dfrac{4y - 8}{3x + 2y - 7}$
4. $y' - \dfrac{y}{x} = \dfrac{-12}{x^3}, \ y(1) = 4$
5. $3(xy' + y) = xy^2, \ y(1) = 3$
6. $\dfrac{dx}{y} - \dfrac{x + y^2}{y^2} dy = 0$
7. $x^5 y''' + x^4 y'' = 1$
8. $y'' = 50y^3; \ y(3) = 1; \ y'(3) = 5$
9. $y''' + 3y'' + 2y' = 3x^2 + 2x$
10. $y''' + y'' - 2y' = (6x + 5)e^x$
11. $y'' - 4y' + 4y = e^{2x} \sin 5x$
12. $y'' + 25y = 20\cos 5x - 10\sin 5x + 50e^{5x}$

Вариант № 15.

1. $\sqrt{5+y^2}+y'y\sqrt{1-x^2}=0$
2. $y'=\dfrac{x^2+2xy-y^2}{2x^2-2xy}$
3. $y'=\dfrac{x+3y-4}{5x-y-4}$
4. $y'+\dfrac{2y}{x}=x^3,\ y(1)=-5/6$
5. $y'-y=2xy^2,\ y(0)=1/2$
6. $\dfrac{y}{x}dx-\dfrac{xy+1}{x}dy=0$
7. $xy'''-y''+1/x=0$
8. $y^3y''+25=0;\ y(2)=-5;\ y'(2)=-1$
9. $y'''-y'=3x^2-2x+1$
10. $y'''+4y''+4y'=(9x+15)e^x$
11. $y''+y=2\cos 5x+3\sin 5x$
12. $y'''-16y'=48e^{4x}+64\cos 4x-64\sin 4x$

Вариант № 16.

1. $6x\,dx-2y\,dy=yx^2dy-3xy^2dx$
2. $xy'=3\sqrt{x^2+y^2}+y$
3. $y'=\dfrac{y-2x+3}{x-1}$
4. $y'+\dfrac{y}{x}=3x,\ y(1)=1$
5. $2xy'-3y=-(20x^2+12)y^3,\ y(1)=1/2\sqrt{2}$
6. $\left(xe^x+\dfrac{y}{x^2}\right)dx-\dfrac{1}{x}dy=0$
7. $xy'''+y''+x=0$
8. $y''+18\sin y\cos^3 y=0;\ y(0)=0;\ y'(0)=3$
9. $y'''-y''=4x^2-3x+2$
10. $y'''-3y''-y'+3y=(4-8x)e^x$
11. $y''+2y'+5y=-17\sin 2x$
12. $y''+2y'=2sh2x$

Вариант № 17.

1. $y\ln y+xy'=0$
2. $2y'=\dfrac{y^2}{x^2}+8\dfrac{y}{x}+8$
3. $y'=\dfrac{x+2y-3}{x-1}$
4. $y'-\dfrac{2xy}{1+x^2}=1+x^2,\ y(1)=3$
5. $y'+2xy=2x^3y^3,\ y(0)=\sqrt{2}$
6. $(10xy-\dfrac{1}{\sin y})dx+(5x^2+\dfrac{x\cos y}{\sin^2 y}-y^2\sin y^3)dy=0$
7. $\mathrm{th}\,x\,y^{\mathrm{IV}}=y'''$
8. $y''=8\sin^3 y\cos y;\ y(1)=\pi/2;\ y'(1)=2$
9. $y^{\mathrm{IV}}-3y'''+3y''-y'=x-3$
10. $y'''-y''-4y'+4y=(7-6x)e^x$
11. $y''+6y'+13y=e^{-3x}\cos x$
12. $y''+36y=24\sin 6x-12\cos 6x+36e^{6x}$

Вариант № 18.

1. $(1+e^x)y'=ye^x$
2. $xy'=\dfrac{3y^3+10yx^2}{2y^2+5x^2}$
3. $y'=\dfrac{3x+2y-1}{x+1}$
4. $y'+\dfrac{1-2x}{x^2}y=1,\ y(1)=1$
5. $xy'+y=y^2\ln x,\ y(1)=1$
6. $\left(\dfrac{y}{x^2+y^2}+e^x\right)dx-\dfrac{xdy}{x^2+y^2}=0$
7. $xy'''+y''=\sqrt{x}$
8. $y''=32y^3;\ y(4)=1;\ y'(4)=4$
9. $y^{\mathrm{IV}}+2y'''+y''=12x^2-6x$
10. $y'''+3y''+2y'=(1-2x)e^{-x}$
11. $y''-4y'+8y=e^x(3\sin x+5\cos x)$
12. $y'''-25y'=25(\sin 5x+\cos 5x)-50e^{5x}$

Вариант № 19.

1. $\sqrt{1-x^2}\,y' + xy^2 + x = 0$
2. $y' = \dfrac{x^2 + 3xy - y^2}{3x^2 - 2xy}$
3. $y' = \dfrac{5y+5}{4x+3y-1}$
4. $y' + \dfrac{3y}{x} = \dfrac{2}{x^3},\ y(1) = 1$
5. $2y' + 3y\cos x = (8 + 12\cos x)e^{2x}y^{-1},\ y(0) = 2$
6. $e^y dx + (\cos y + xe^y)dy = 0$
7. $y'''\,\mathrm{tg}\,x = y'' + 1$
8. $y^3 y'' + 16 = 0;\ y(1) = 2;\ y'(1) = 2$
9. $y''' - 4y'' = 32 - 384x^2$
10. $y''' - 5y'' + 7y' - 3y = (20 - 16x)e^{-x}$
11. $y'' + 2y' = 6e^x(\sin x + \cos x)$
12. $y'' + 3y' = 2sh3x$

Вариант № 20.

1. $6xdx - 2ydy = 2yx^2dy - 3xy^2dx$
2. $xy' = 3\sqrt{2x^2 + y^2} + y$
3. $y' = \dfrac{x + 4y - 5}{6x - y - 5}$
4. $y' + 2xy = -2x^3,\ y(1) = e^{-1}$
5. $4y' + x^3 y = (8 + x^3)e^{-2x}y^2,\ y(0) = 1$
6. $(y^3 + \cos x)dx + (3xy^2 + e^y)dy = 0$
7. $y'''\,\mathrm{tg}\,5x = 5y''$
8. $y'' + 32\sin y\cos^3 y = 0;\ y(0) = 0;\ y'(0) = 4$
9. $y^{IV} + 2y''' + y'' = 2 - 3x^2$
10. $y''' - 4y'' + 3y' = -4xe^x$
11. $y'' - 4y' + 4y = -e^{2x}\sin 4x$
12. $y'' + 49y = 14\,sin\,7x + 7\,cos\,7x - 98e^{7x}$

Вариант № 21.

1. $y(1 + \ln y) + xy' = 0$
2. $y' = \dfrac{y^2}{x^2} + 8\dfrac{y}{x} + 12$
3. $y' = \dfrac{x + y + 2}{x + 1}$
4. $y' + \dfrac{xy}{2(1 - x^2)} = \dfrac{x}{2},\ y(0) = 2/3$
5. $8xy' - 12y = -(5x^2 + 3)y^3,\ y(1) = \sqrt{2}$
6. $xe^{y^2}dx + (x^2 ye^{y^2} + tg^2 y)dy = 0$
7. $y'''\,\mathrm{tg}\,7x = 7y''$
8. $y'' = 50\sin^3 y\cos y;\ y(1) = \pi/2;\ y'(1) = 5$
9. $y''' + y'' = 49 - 24x^2$
10. $y''' - 5y'' + 3y' + 9y = (32x - 32)e^{-x}$
11. $y'' + 6y' + 13y = e^{-3x}\cos 5x$
12. $y''' - 36y' = 36e^{6x} - 72(cos\,6x + sin\,6x)$

Вариант № 22.

1. $(3 + e^x)yy' = e^x$
2. $xy' = \dfrac{3y^3 + 12yx^2}{2y^2 + 6x^2}$
3. $y' = \dfrac{2x + y - 3}{4x - 4}$
4. $y' + xy = -x^3,\ y(0) = 3$
5. $2(y' + y) = xy^2,\ y(0) = 2$
6. $(5xy^2 - x^3)dx + (5x^2 y - y)dy = 0$
7. $x^3 y''' + x^2 y'' = \sqrt{x}$
8. $y'' = 18y^3;\ y(1) = 1;\ y'(1) = 3$
9. $y''' - 2y'' = 3x^2 + x - 4$
10. $y''' - 6y'' + 9y' = 4xe^x$
11. $y'' + y = -3\sin 7x + 2\cos 7x$
12. $y'' + 4y' = 16sh4x$

Вариант № 23.

1. $\sqrt{3+y^2}+\sqrt{1-x^2}\,yy'=0$
2. $y'=\dfrac{x^2+xy-3y^2}{x^2-4xy}$
3. $y'=\dfrac{2x+y-3}{2x-2}$
4. $y'-\dfrac{2y}{x+1}=e^x(x+1)^2,\ \ y(0)=1$
5. $y'+xy=(x-1)e^x y^2,\ y(0)=1$
6. $\left[\cos(x+y^2)+\sin x\right]dx+2y\cos(x+y^2)dy=0$
7. $\operatorname{cth}x\,y''-y'+\dfrac{1}{\operatorname{ch}x}=0$
8. $y^3y''+9=0;\ y(1)=1;\ y'(1)=3$
9. $y'''-13y''+12y'=x-1$
10. $y'''-7y''+15y'-9y=(8x-12)e^x$
11. $y''+2y'+5y=-\cos x$
12. $y''+64y=16\sin 8x-16\cos 8x-64e^{8x}$

Вариант № 24.

1. $xdx-ydy=yx^2dy-xy^2dx$
2. $xy'=2\sqrt{3x^2+y^2}+y$
3. $y'=\dfrac{y}{2x+2y-2}$
4. $y'+2xy=xe^{-x^2}\sin x,\ \ y(0)=1$
5. $2y'-3y\cos x=-e^{-2x}(2+3\cos x)y^{-1},\ y(0)=1$
6. $(x^2-4xy-2y^2)dx+(y^2-4xy-2x^2)dy=0$
7. $(x+1)y'''+y''=(x+1)$
8. $y^3y''=4(y^4-1);\ y(0)=\sqrt{2};\ y'(0)=\sqrt{2}$
9. $y^{IV}+y'''=x$
10. $y'''-y''-5y'-3y=-(8x+4)e^x$
11. $y''-4y'+8y=e^x(2\sin x-\cos x)$
12. $y'''-49y'=14e^{7x}-49(\cos 7x+\sin 7x)$

Вариант № 25.

1. $y'y\sqrt{\dfrac{1-x^2}{1-y^2}}+1=0$
2. $4y'=\dfrac{y^2}{x^2}+10\dfrac{y}{x}+5$
3. $y'=\dfrac{x+5y-6}{7x-y-6}$
4. $y'-\dfrac{2y}{x+1}=(x+1)^3,\ \ y(0)=1/2$
5. $y'-y=xy^2,\ y(0)=1$
6. $(\sin y+y\sin x+\dfrac{1}{x})dx+(x\cos y-\cos x+\dfrac{1}{y})dy=0$
7. $(1+\sin x)y'''=\cos x\,y''$
8. $y''+50\sin y\cos^3 y=0;\ y(0)=0;\ y'(0)=5$
9. $y'''-y''=6x+5$
10. $y'''+5y''+7y'+3y=(16x+20)e^x$
11. $y''+2y'=3e^x(\sin x+\cos x)$
12. $y''+5y'=50sh5x$

Вариант № 26.

1. $\sqrt{5+y^2}dx+4(x^2y+y)dy=0$
2. $xy'=\dfrac{3y^3+14yx^2}{2y^2+7x^2}$
3. $y'=\dfrac{x+y-4}{x-2}$
4. $y'-y\cos x=-\sin 2x, y(0)=3$
5. $2(xy'+y)=y^2\ln x, y(1)=2$
6. $(1+\dfrac{1}{y}e^{x/y})dx+(1-\dfrac{x}{y^2}e^{x/y})dy=0$
7. $(1+x^2)y''+2xy'=12x^3$
8. $y''=8y^3; y(0)=1; y'(0)=2$
9. $y'''+3y''+2y'=x^2+2x+3$
10. $y'''-2y''-3y'=(8x-14)e^{-x}$
11. $y''-4y'+4y=e^{2x}\sin 4x$
12. $y''+81y=9\sin 9x+3\cos 9x+162e^{9x}$

Вариант № 27.

1. $(1+e^x)yy' = e^x$
2. $y' = \dfrac{x^2+xy-5y^2}{x^2-6xy}$
3. $y' = \dfrac{2x+y-1}{2x-2}$
4. $y' - 4xy = -4x^3, y(0) = -1/2$
5. $y' + y = xy^2, \quad y(0) = 1$
6. $\dfrac{(x-y)dx + (x+y)dy}{x^2+y^2} = 0$
7. $-xy''' + 2y'' = \dfrac{2}{x^2}$
8. $y^3y'' + 4 = 0; y(0) = -1; y'(0) = -2$
9. $y''' - 5y'' + 6y' = (1-x)^2$
10. $y''' + 2y'' - 3y' = (8x+6)e^x$
11. $y'' + 6y' + 13y = e^{-3x}\cos 8x$
12. $y''' - 64y' = 128\cos 8x - 64e^{8x}$

Вариант № 28.

1. $\sqrt{2+y^2}\,dx + 3(x^2y + y)dy = 0$
2. $xy' = 4\sqrt{x^2+y^2} + y$
3. $y' = \dfrac{3y-2x+1}{3x+3}$
4. $y' - \dfrac{y}{x} = -\dfrac{\ln x}{x}, y(1) = 1$
5. $2(y' + xy) = (x-1)e^x y^2, y(0) = 2$
6. $2(3xy^2 + 2x^3)dx + 3(2x^2y + y^2)dy = 0$
7. $\operatorname{cth} x\, y'' + y' = \operatorname{ch} x$
8. $y'' = 2\sin^3 y \cos y; y(1) = \pi/2; y'(1) = 1$
9. $y''' - 13y'' + 12y' = 18x^2 - 39$
10. $y''' + 6y'' + 9y' = (16x+24)e^x$
11. $y'' + 2y' + 5y = 10\cos x$
12. $y'' + y' = 2shx$

Вариант № 29.

1. $2xdx - ydy = x^2ydy - xy^2dx$
2. $3y' = \dfrac{y^2}{x^2} + 10\dfrac{y}{x} + 10$
3. $y' = \dfrac{6y-6}{5x+4y-9}$
4. $y' - 3x^2y = x^2(1+x^3)/3, y(0) = 0$
5. $2(y' + xy) = (x-1)e^x y^2, y(0) = 2$
6. $(3x^3 + 6x^2y + 3xy^2)dx + (2x^3 + 3x^2y)dy = 0$
7. $x^4y'' + x^3y' = 4$
8. $y^3y'' + 1 = 0; y(1) = -1; y'(1) = -1$
9. $y^{IV} - 6y''' + 9y'' = 3x - 1$
10. $y''' - y'' - 9y' + 9y = (12 - 16x)e^x$
11. $y'' + y = 2\cos 4x + 3\sin 4x$
12. $y'' + 100y = 20\sin 10x - 30\cos 10x - 200e^{10x}$

Вариант № 30.

1. $\sqrt{2-x^2}\,y' + 2xy^2 + 2x = 0$
2. $xy' = 4\sqrt{2x^2+y^2} + y$
3. $y' = \dfrac{x+6y-7}{8x-y-7}$
4. $y' - y\cos x = \sin 2x, y(0) = -1$
5. $xy' + y) = xy^2, y(1) = 1$
6. $xdx + ydy + (xdy - ydx)/(x^2+y^2) = 0$
7. $y'' + \dfrac{2x}{1+x^2}y' = 2x$
8. $y'' = 2y^3; y(-1) = 1; y'(-1) = 1$
9. $y^{IV} + y''' = 12x + 6$
10. $y''' + 4y'' + 3y' = 4(1-x)e^{-x}$
11. $y'' - 4y' + 4y = e^{2x}\sin 6x$
12. $y''' - 81y' = 162e^{9x} + 81\sin 9x$