Вариант 12.

1. $xy\left(1+x^2\right)dy=\left(1+y^2\right)dx$
2. $xy'\sin\frac{y}{x}+x=y\sin\frac{y}{x}$
3. $xy'-\frac{y}{x+1}=x, y(1)=0$
4. $xy'+y=y^2$
5. $yx^{y-1}dx+x^y\ln x dy=0$
6. $xy''+y'=1+x$
7. $y''=\frac{y'}{\sqrt{y}}, y(1)=1, y'(1)=2$
8. $y''+y=0, y(0)=0, y'(0)=1$
9. $y'''+7y''+12y'=0$
10. $y''+2y'=x^2+3$
11. $y''+16y'+64y=\sin x$
12. $y''+4y=2\sin 2x$
13. $y''-5y'+6y=xe^{2x}+x^2\cos x$
14. $y''+2y'+y=\frac{-e^{-x}}{x}$
15. $y^{(VI)}+2y^{(IV)}=e^{-x}$