Вариант 5.

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