Вариант 13.

1. $y' \cos 2x = y \ln y$

2. $y' = \frac{xy}{x^2 - y^2}, y(2) = 1$

3. $\left(x^2 - 1\right) y' + xy = \sqrt{x^2 - 1}$

4. $xy' - 3y = \frac{2x^2}{y}$

5. $\left(2x^2 - xy^2\right) dx + \left(2y^3 - x^2 y\right) dy = 0$

6. $y'' + 2x \left(y'\right)^2 = 0, y(1) = -1, y'(1) = 1$

7. $y'' \operatorname{ctg} y + 2 \left(y'\right)^2 = 0$

8. $y'' - 8y' + 16y = 0, y(0) = 0, y'(0) = 4$

9. $y''' + 4y'' + 29y' = 0$

10. $y'' - 4y' = x^3 + 1$

11. $y'' + y' - 2y = 5 \sin 2x$

12. $y'' + 9y = 3 \cos 3x$

13. $y'' + 2y' + 2y = e^x(x + 1) + 3 \sin x$

14. $y'' + 2y' + y = 5e^{-x}\sqrt{x + 1}$

15. $y^{(VI)} + 4y^{(IV)} = 2e^{2x}$