BTVN. Giải phương trình:

1) $y' + \frac{2}{x} y = xy$

2) $1 + y' = e^{y} - 1$

3) $\left(x^{2} - yx^{2}\right) y' + y^{2} + xy^{2} = 0$

4) $y' + \sin\left(x + y\right) = \sin\left(x - y\right)$

5) $y' = x^{2} + 2xy - 1 + y^{2}$

6) $y' = \frac{1}{x - y} + 1$

7) $2^{x+y} + 3^{x-2y} y' = 0$

8) $xyy' + x^2 - 2y^2 = 0$

9) $\left(3x^2 + y^2\right)y + \left(y^2 - x^2\right)xy' = 0$

10) $\left(1 + x^2\right)y' + xy = 1; \quad y\left(0\right) = 0$

11) $y' - y\cot x = \sin x$

12) $xy^2 + x^2\left(1 + x\right)yy' + 3x - 5 = 0$

13) $\left(y\ln x - 2\right)ydx = xdy$

14) $y' + y = e^{\frac{x}{2}}\sqrt{y};\ \ y(0) = \frac{9}{4}$

15) $\frac{dy}{dx}\left(x^2y^3 + xy\right) = 1$

16) $3x^2\left(1 + \ln y\right)dx - \left(2y - \frac{x^3}{y}\right)dy = 0$