

1. Solve the following DE:

a) $x \frac{dy}{dx} - y = \sqrt{9x^2 + y^2}; x > 0$

b) $\frac{dy}{dx} = \frac{x\sqrt{x^2 + y^2} + y^2}{xy}; x > 0$

c) $\frac{dy}{dx} + 2x^{-1}y = 6\sqrt{1+x^2}\sqrt{y}; \quad x > 0$

d) $\frac{dy}{dx} = \cos^2(3x + 3y - 1)$

e) $\frac{dy}{dx} + \frac{2x}{1+x^2} y = xy^2; y(0) = 1$

f) $\frac{dy}{dx} = \frac{x+2y-1}{2x-y+3}$