

Find dy/dx for each of the following.

1. $y^3 = x \sin x$

5. $x^4 y^2 + 3x^2 y + 2 = 0$

2. $\frac{\sqrt{2x}}{y} = \sin y$

6. $7x(y+3) = \tan y - x$

3. $\cos(xy) = x$

7. $\frac{x^2 + y^2}{x^2 - y^2} = 4$

4. $\cos(x+y) = x$

8. $x^3 + x^2 y^2 + y^3 = 30$

9. $3x^2 + \tan y + (y+3)^2 = 5$

10. $\sin y \cos y = 2x^3 + x$

11. If $9x^2 + 4y^2 = 25$, find

a. $\frac{dy}{dx}$

c. $\frac{d^2y}{dx^2}$

b. $\left. \frac{dy}{dx} \right|_{(1,2)}$

d. $\left. \frac{d^2y}{dx^2} \right|_{(1,2)}$