

Implicit Differentiation Practice

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For each problem, use implicit differentiation to find $\frac{dy}{dx}$ in terms of x and y .

1) $2x^2 - 5y^3 = 2$

2) $-4y^3 + 4 = 3x^3$

3) $4y^2 + 3 = 3x^3$

4) $5x = 4y^3 + 3$

5) $2x^3 + 5y^2 + 2y^3 = 5$

6) $x^2 + 5y = -4y^3 + 5$

7) $x + y^3 + 2y = 4$

8) $2x + 4y^2 + 3y^3 = 5$

9) $-5x^3y + 2 = x + 2xy^2$

10) $-3x^3y^2 + 5 = 5x + x^2y^3$

11) $4 = 4x + 4xy + y$

12) $-5x^3y - x^2y + 1 = 2x^2$

Answers to Implicit Differentiation Practice

$$1) \frac{dy}{dx} = \frac{4x}{15y^2}$$

$$2) \frac{dy}{dx} = -\frac{3x^2}{4y^2}$$

$$3) \frac{dy}{dx} = \frac{9x^2}{8y}$$

$$4) \frac{dy}{dx} = \frac{5}{12y^2}$$

$$5) \frac{dy}{dx} = -\frac{3x^2}{5y + 3y^2}$$

$$6) \frac{dy}{dx} = -\frac{2x}{5 + 12y^2}$$

$$7) \frac{dy}{dx} = -\frac{1}{3y^2 + 2}$$

$$8) \frac{dy}{dx} = -\frac{2}{8y + 9y^2}$$

$$9) \frac{dy}{dx} = \frac{1 + 2y^2 + 15x^2y}{-5x^3 - 4xy}$$

$$10) \frac{dy}{dx} = \frac{5 + 2xy^3 + 9x^2y^2}{-6x^3y - 3x^2y^2}$$

$$11) \frac{dy}{dx} = \frac{-4 - 4y}{4x + 1}$$

$$12) \frac{dy}{dx} = \frac{4 + 15yx + 2y}{-5x^2 - x}$$