Implicit Differentiation

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

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

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

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

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

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

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

7) $-3x^2y^2 - 2y^3 + 5 = 5x^2$

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

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

10) $-4x^2y^3 + 2 = 5x^2 + y^2$

11) $4x = -5y^2 - x^2y + 4$

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

Implicit Differentiation (… set 1)

Answer

Implicit Differentiation

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

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

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

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

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

6) $\frac{dy}{dx} = \frac{12x^2 + 2y^2 + 6y^3x}{-4xy - 9x^2y^2}$

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

8) $\frac{dy}{dx} = \frac{-15x^2y - 8x - 4y}{4x + 5x^3}$

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

10) $\frac{dy}{dx} = \frac{5x + 4xy^3}{-6y^2x^2 - y}$

11) $\frac{dy}{dx} = \frac{2xy + 4}{-10y - x^2}$

12) $\frac{dy}{dx} = \frac{10x + 3x^2y^2}{-2yx^3 - 9y^2}$