

Answer on Question #60359 – Math - Calculus

Question

Given

$$x^3 + 2y^3 - 3x^2y^2 + 6x^2 - 3xy^2 + 5 = 0$$

Find dy/dx .

Solution

$$3x^2 + 6y^2y' - 3(2xy^2 + 2yx^2y') + 12x - 3(y^2 + 2xyy') = 0$$

$$y'(6y^2 - 6yx^2 - 6xy) + 3x^2 - 6xy^2 + 12x - 3y^2 = 0$$

$$y' = \frac{-3x^2 + 6xy^2 - 12x + 3y^2}{6y^2 - 6yx^2 - 6xy} = \frac{y^2 - x^2 + 2xy^2 - 4x}{2y(y - x^2 - x)}$$

Answer:

$$y' = \frac{y^2 - x^2 + 2xy^2 - 4x}{2y(y - x^2 - x)}$$