

Implicit Functions Find The Error

In finding the derivative of each of the following implicit functions there is an ERROR! Determine on which line the error occurs.

Find $\frac{dy}{dx}$ given: $3x - 2xy = 7y$

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

(2) $3 - 2y = 7 \frac{dy}{dx} - 2x \frac{dy}{dx}$

(3) $3 - 2y = (7 - 2x) \frac{dy}{dx}$

(4) $\frac{dy}{dx} = \frac{3 - 2y}{7 - 2x}$

Find $\frac{dy}{dx}$ given: $2xy^3 + 2x = y - 2$

$$(1) \quad 2y^3 + 2x3y^2 \frac{dy}{dx} + 2 = \frac{dy}{dx}$$

$$(2) \quad 2y^3 + 2 = \frac{dy}{dx} - 2x3y^2 \frac{dy}{dx}$$

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

$$(4) \quad \frac{dy}{dx} = \frac{2y^3 + 2}{-6xy^2}$$

Find $\frac{dy}{dx}$ given: $(5 - 3y)^4 = x^3 - 2$

$$(1) \quad 4(5 - 3y)^3 \left(-3 \frac{dy}{dx}\right) = 3x^2$$

$$(2) \quad -3 \frac{dy}{dx} = 3x^2 - 4(5 - 3y)^3$$

$$(3) \quad \frac{dy}{dx} = -\frac{3x^2 - 4(5 - 3y)^3}{3}$$

Find $\frac{dy}{dx}$ given: $5x = (2x + y)^4$

$$(1) \quad 5 = 4(2x + y)^3 \cdot 2 + \frac{dy}{dx}$$

$$(2) \quad 5 = 8(2x + y)^3 + \frac{dy}{dx}$$

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

Find $\frac{dy}{dx}$ given: $\sqrt{y-1} = x^4 - 1$

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

$$(2) \quad (2y-1)^{-\frac{1}{2}}\left(\frac{dy}{dx}\right) = 8x^3$$

$$(3) \quad \frac{dy}{dx} = \frac{8x^3}{(2y-1)^{\frac{1}{2}}}$$