3 $4x^2 + 2xy^3 - 5y^2 = 0$

take derivative with respect to x

$$\frac{d}{dx}(4x^2) + \frac{d}{dx}(2xy^3) - \frac{d}{dx}(5y^2) = \frac{d}{dx}(0)$$

using differential rule

$$\frac{d}{dx}(a \times f) = a \times \frac{d}{dx}(f)$$

$$4 \times \frac{d}{dx}(x^2) + \frac{d}{dx}(2xy^3) - \frac{d}{dx}(5y^2) = \frac{d}{dx}(0)$$

$$4 \times \frac{d}{dx}(x^2) + \frac{d}{dx}(2x)xy^3 + 2x \times \frac{d}{dy}(y^3) - \frac{d}{dx}(5y^2) = \frac{d}{dx}(0)$$

$$\frac{d}{dx}(5y^2) = \frac{d}{dy}(5y^2) \times \frac{dy}{dx}$$

$$4 = \frac{d}{dx}(x^2) = \frac{d}{dx}(2x) \times y^3 + 2x \times \frac{d}{dx}(y^3) - \frac{d}{dy}(5y^2) \times \frac{dy}{dx} = \frac{d}{dx}(0)$$

$$4 \times 2x + \frac{d}{dx}(2x) \times y^3 + 2x \times \frac{d}{dx}(y^3) - \frac{d}{dy}(5y^2) \times \frac{dy}{dx} = 0$$

$$\frac{d}{dx}(5y^2) = \frac{d}{dy}(5y^2) \times \frac{dy}{dx}$$

$$4 = \frac{d}{dx}(x^2) = \frac{d}{dx}(2x) \times y^3 + 2x \times \frac{d}{dx}(y^3)$$

$$- \frac{d}{dy}(5y^2) \times \frac{dy}{dx} = \frac{d}{dx}(0)$$

where constant $= 0$

$$4 \times \frac{d}{dx}(x^2) + \frac{d}{dx}(2x) \times y^3 + 2x \times \frac{d}{dx}(y^3)$$

$$- \frac{d}{dy}(5y^2) \times \frac{dy}{dx} = 0$$

using $\frac{d}{dx}(x^n) = n \times x^{n-1}$

$$\therefore 4 \times 2x + \frac{d}{dx}(2x) \times y^3 + 2x \times \frac{d}{dx}(y^3) - \frac{d}{dy}(5y^2)$$

$$\times \frac{dy}{dx} = 0$$

$$4 \times 2x + 2y^3 \times 2x \times 3y^2 \times \frac{d}{dx}(y) \frac{d}{dy}(5y^2) \times \frac{dy}{dx} = 0$$

using $\frac{d}{dy}(af) = a \times \frac{d}{dy}(f)$

$$4 \times 2x + 2y^3 + 2x \times 3y^2 \times \frac{d}{dx}(y) - 5 \times \frac{d}{dy}(y^2) \times \frac{dy}{dx} = 0$$

$$8x + 2y^3 + 2x \times 3y^2 \times \frac{d}{dx}(y) - 5 \times \frac{d}{dy}(y^2) \times \frac{dy}{dx} = 0$$

$$8x + 2y^3 + 6xy^2 \times \frac{d}{dx}(y) - 5 \times \frac{d}{dy}(y^2) \times \frac{dy}{dx} = 0$$

using $\frac{d}{dx}(x^n) = n \times x^{n-1}$

$$\therefore 8x + 2y^3 + 6xy^2 \times \frac{d}{dy}(y) - 5 \times 2y \times \frac{dy}{dx} = 0$$

using chain rule

$$\frac{d}{dx}(y) = \frac{d}{dy}(y) \times \frac{dy}{dx}$$

$$8x + 2y^3 + 6xy^2 \times \frac{d}{dy}(y) \times \frac{dy}{dx} - 5 \times 2y \times \frac{dy}{dx} = 0$$

$$8x + 2y^3 + 6xy^2 \times \frac{d}{dy}(y) \times \frac{dy}{dx} - 10y \times \frac{dy}{dx} = 0$$

$$8x + 2y^3 + 6xy^2 \times 1 \times \frac{dy}{dx} - 10y \times \frac{dy}{dx} = 0$$

move variables

$$6xy^2 \times \frac{dy}{dx} - 10y \times \frac{dy}{dx} = -8x - 2y^3$$

Divide throughout by $6xy^2 - 10y$

$$\frac{dy}{dx} = \frac{-8x - 2y^3}{6xy^2 - 10y}$$

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