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COURSE TITLE/CODE: GENERAL MATHEMATICS III / MAT 104

QUESTION

For the curve in problems 1 to 5, at the points given, find (a) the equation of the tangent, and b) the equation of the normal.

1. $y = 2x^2$ at the point $(1, 2)$

$$y = 2x^2$$

$$\frac{dy}{dx} = 4x \quad \therefore \frac{dy}{dx} \bigg|_{x=1}$$

$$= 4(1) = 4$$

$$\therefore m = 4 \quad x_1 = 1, \quad y_1 = 2$$

$$\text{where } y - y_1 = m(x - x_1)$$

$$y - 2 = 4(x - 1)$$

$$y - 2 = 4x - 4$$

$$y - 2 + 4 - 4x = 0$$

$y + 2 - 4x = 0$ which gives the equation of the tangent.

For equation of the normal

$$m_1 m_2 = -1 \quad \text{where } m_1 = 4$$