

$$y - 8 = 4x - 8$$

$$y - 4x = 8 - 8 = 0$$

$$y = 4x = 0$$

$$(b) m_1 m_2 = -1$$

$$m_2 = -1/m_1$$

$$y - y_1 = m(x - x_1)$$

$$y - 8 = -1/4(x - 2)$$

$$4y - 32 = -x + 2$$

$$4y + x - 32 - 2 = 0$$

$$4y + x - 34 = 0$$

$$3) y = x^{3/2} \text{ at the point } (-1, -1/2)$$

Sol

$$(a) \frac{dy}{dx} = \frac{d}{dx} \left(x^{3/2} \right) = \frac{3}{2} x^{1/2} = \frac{3}{2} \sqrt{x} = \frac{3}{2} \sqrt{-1} = \frac{3}{2} i$$

$$\frac{dy}{dx} = \frac{6(-1)^2}{4} = \frac{6}{4} = \frac{3}{2}, m = \frac{3}{2}$$

$$x_1 = -1, y_1 = -1/2$$

$$y - y_1 = m(x - x_1)$$

$$y + 1/2 = 3/2(x + 1)$$

$$y + 1/2 = 3/2 x + 3/2$$

$$y - 3/2 x - 1 = 0$$

$$(b) m_1 m_2 = -1, m_2 = -2/3$$

$$y - y_1 = m(x - x_1)$$

$$y + 1/2 = -2/3(x + 1)$$

$$y + 1/2 = -2/3 x - 2/3$$

$$y + 2/3 x + 7/6 = 0$$

$$4) y = 1 + x - x^2 \text{ at the point } (-2, -5)$$

Solution

$$\frac{dy}{dx} = 0 + 1 - 2x = 0 + 1 - 2(-2) = -1$$

$$m = -1$$