

19 | MHS01 | 210

$10x - 4 - 12 = 0$ (which gives the equation of tangent)

$$m_1 m_2 = -1$$

$$m_2 = -\frac{1}{m_1}$$

$$m_2 = -\frac{1}{10}$$

$$(4 - 4_1) = m_2(x - x_1)$$

$$4 - 8 = -\frac{1}{10}(x - 2)$$

$$10(4 - 8) = -1(x - 2)$$

$$10(4 - 8) = -x + 2$$

$$-40 - 10(4) + 2 + 80 = 0$$

$$-40 - 40 + 2 + 80 = 0$$

$-40 - 40 + 2 + 80 = 0$ (which gives the equation of tangent)

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

$$x_1 = -1 \quad y_1 = 1/2$$

$$\text{Gradient } m = \frac{dy}{dx} = x = 1/2$$

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

$$= -\frac{1}{2}$$

$$4 - y_1 = m(x - x_1)$$

$$4 - (-1/2) = -\frac{1}{2}(x - (-1))$$

$$4 + 1/2 = -\frac{1}{2}(x + 1)$$

$$2(4 + 1/2) = -1(x + 1)$$

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

$$3x - 2(4) + 2 = 0$$

$3x - 2(4) + 2 = 0$ (which gives the equation of tangent)

$$m_1 m_2 = -1$$

$$\frac{3}{2} m_2 = -1$$

$$m_2 = -1 \div \frac{3}{2} = -\frac{2}{3}$$

$$m_2 = -1 \times \frac{2}{3}$$

$$m_2 = -\frac{2}{3}$$

$$4 - y_1 = m(x - x_1)$$

$$4 - (-1/2) = -\frac{2}{3}(x - (-1))$$

$$4 + 1/2 = -\frac{2}{3}(x + 1)$$

$$3(4 + 1/2) = -2(x + 1)$$

$$3(4 + 1/2) = -2x - 2$$

$$-2x - 2(3) + 2 = 0$$

$$-2x - 6 + 2 = 0$$

$$-2x - 8y - \frac{y}{2} = 0 \text{ (Equation of the Normal)}$$

$$y = 1 + 2x - 2x^2 \text{ at the point } (-3, 5)$$

$$\frac{dy}{dx} = 2 - 4x$$

$$\text{Slope } m = \frac{dy}{dx} = 2 - 4(-3) = 14$$

$$\text{Equation of the Normal}$$

$$y - 5 = -\frac{1}{14}(x + 3)$$

$$y - 5 = m(x - x_1)$$

$$y - (-5) = 5(x - (-3))$$

$$y + 5 = 5x + 15$$

$$5x - 4 + 5 = 0 \text{ (Equation of the Tangent)}$$

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$$m_1 m_2 = -1$$

$$m_1 = \frac{1}{m_2}$$

$$m_2 = -\frac{1}{m_1}$$

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

$$9 - (-5) = \frac{1}{5}(x - (-2))$$

$$y + 5 = \frac{1}{5}(x + 2)$$

$$5(y + 5) = x + 2$$

$$5y + 25 = x + 2$$

$$-x + 5y + 23 = 0 \text{ (Equation of Normal)}$$

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$$-x - 8y - 27 = 0 \text{ (Equation of Normal)}$$

$$-x - 8y - 27 = 0 \text{ (Equation of Normal)}$$

$$y = \frac{1}{x} \text{ at the point } (3, \frac{1}{3})$$

$$\frac{dy}{dx} = -\frac{1}{x^2} = -\frac{1}{3^2} = -\frac{1}{9}$$

$$\text{Slope } m = \frac{dy}{dx} = -\frac{1}{9}$$

$$\text{Equation of the Normal}$$

$$y - \frac{1}{3} = 9(x - 3)$$

$$y - \frac{1}{3} = 9x - 27$$

$$9y - 3 = 81x - 27$$

$$-81x + 9y + 24 = 0 \text{ (Equation of Tangent)}$$

$$-81x + 9y + 24 = 0 \text{ (Equation of Tangent)}$$

$$-x - 9y + 13 = 0 \text{ (Equation of Tangent)}$$

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$$m_1 m_2 = -1$$

$$m_2 = -\frac{1}{m_1}$$

$$m_1 = \frac{1}{m_2}$$

$$m_2 = -\frac{1}{m_1}$$

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$$m_2 = -\frac{1}{m_1}$$

