

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

$$2y - 3x = 2$$

$$2y - 3x - 2 = 0 \text{ [Equation of tangent]}$$

Equation of a normal

$$m_1 m_2 = -1$$

$$m_2 = -1/m_1 = -1/3/2$$

$$m_2 = -2/3$$

$$y - (-1/2) = m(x - (1/2))$$

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

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

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

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

$$3y + 2x + 1/2 = 0 \text{ [Equation of normal]}$$

4  $y = 1 + x - x^2$  point  $(-2, -5)$ .

$$m = \frac{dy}{dx} = 1 - 2x$$

$$m = 1 - 2(-2) = 5$$

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

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

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

$$y + 5 = 5x + 10$$

$$y - 5x = 5$$

$$y - 5x - 5 = 0$$

Equation of tangent =  $y - 5x - 5 = 0$

Equation of Normal

$$m_1 m_2 = -1$$

$$m_2 = -1/m_1 = -1/5$$

$$y + 5 = -1/5(x + 2)$$

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

$$5y + x = -27$$

$$5y + x + 27 = 0$$

$$m_2 = -1/m_1 = 1$$

$$y + 5 = 1(x + 2)$$

$$y + 5 = x + 2$$

$$y - x = -5 + 2$$

$$y - x = -3$$

$$y - x + 3 = 0 \text{ [Equation of normal]}$$

5  $y = 1/x$   $(3, 1/3)$

$$y = x^{-1}$$

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

$$m = -1/x^2 = -1/9$$

$$m = -1/9$$

$$x_1 = 3, y_1 = 1/3$$

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

$$y - 1/3 = -1/9(x - 3)$$

$$y - 1/3 = -1/9(x - 3)$$

$$y - 1/3 = -1/9(x - 3)$$

$$y - 1/3 = -1/9(x - 3)$$

$$y + x = 1/3 + 3 \times 3$$

$$3y + 3x = 1 + 9$$

$$3y + 3x = 10$$

$$3y + 3x - 10 = 0 \text{ [Equation of tangent]}$$

$$m_2 = -1/m_1 = 1$$

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

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

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

$$3y - 3x = 1 - 9$$

$$3y - 3x = -8$$

$$3y - 3x - 8 = 0 \text{ [Equation of normal]}$$