

$$m_1 m_2 = -1$$

$$m_2 = \frac{-1}{m_1} \quad m_2 = \frac{-1}{\frac{1}{2}} \quad m_2 = -1 \times \frac{2}{1} = -2$$

$3y - 4 = 2x + 3$  and  $y - 3 = x + 6$  are not perpendicular.

3) Find the tangent and Normal of the Curve  $x^2 + y^2 + 3xy - 11 = 0$  (1, 2)

$$x^2 + y^2 + 3xy - 11 = 0$$

$$2x + 2y \frac{dy}{dx} + 3(x \frac{dy}{dx} + yx_1) - 0 = 0$$

$$2x + 2y \frac{dy}{dx} + 3x \frac{dy}{dx} + 3y = 0$$

$$2y \frac{dy}{dx} + 3x \frac{dy}{dx} = -2x - 3y$$

$$\frac{dy}{dx} = \frac{-2x - 3y}{2y + 3x}$$

$$m = \frac{dy}{dx} = \frac{-(2x + 3y)}{2y + 3x}$$

$$m = \frac{-(2(1) + 3(2))}{2(2) + 3(1)} = \frac{-(2+6)}{4+3} = \frac{-8}{7}$$

$$m = \frac{-8}{7}$$

for equation of tangent

$$7-2 = \frac{-8}{7} (x-0)$$

$$y-2 = \frac{-8x}{7} + \frac{8}{7}$$

$$7y-14 = -8x+8$$

$$7y-14+8x-8=0$$

$$7y+8x-22=0$$

Maths assignment  
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MBB

Examine whether or not they're perpendicular

and  $3y + x + 7 = 0$

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

$$3y = -x - 7$$

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

$$\frac{dy}{dx} = -\frac{1}{3}$$

$$\frac{dy}{dx} = 3$$

( $m_1$ )

( $m_2$ )

$$m_1 m_2 = -1$$

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

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

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

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

and  $3y + x + 7 = 0$  are perpendicular

$$3y - 4 = 2x + 3$$

and  $y - 5 = x + 6$

$$3y - 4 = 2x + 3$$

$$y - 5 = x + 6$$

$$3y = 2x + 7$$

$$y = x + 11$$

$$y = \frac{2x}{3} + \frac{7}{3}$$

$$\frac{dy}{dx} = 1$$

( $m_1$ )

( $m_2$ )