

TADESE VICTOR ADEDAMOLA

ELECT/ELECT ENGINEERING

19/ENG04/055

MAT 102 ASSIGNMENT

(1) $(1,0)$ on $x^2 + y^2 - 5x - y + 4 = 0$

$$2x + 2y \frac{dy}{dx} - 5 - \frac{dy}{dx} = 0$$

$$\frac{dy}{dx} = \frac{5-2x}{2y-1}$$

Passing through $(1,0)$

$$\frac{5-2}{-1} = -3$$

$m = -3$ at point $(1,0)$

$$\frac{-3}{1} = \frac{y-0}{x-1} = \frac{y-y_1}{x-x_1}$$

$$-3x + 3 = y$$

$$y + 3x - 3 = 0$$

(2) $(1,0)$ on $x^2 + y^2 - 12x - 12y + 47 = 0$

$$2x + 2y \frac{dy}{dx} - 12 - 12 \frac{dy}{dx} = 0$$

$$\frac{dy}{dx} = \frac{12-2x}{2y-12}$$

passing through $(1,0)$

$$\frac{dy}{dx} = m = \frac{12-2}{-12} = \frac{10}{-12} = \frac{-5}{6}$$

$m = -5/6$ at point $(1,0)$.

$$\frac{-5}{6} = \frac{y-0}{x-1} = \frac{y-y_1}{x-x_1}$$

$$-5x + 5 = 6y$$

$$6y + 5x - 5 = 0$$

3) $(1,0)$ on $x^2 + y^2 - 8x + 14y + 40 = 0$

$$2x + 2y \frac{dy}{dx} - 8 + 14 \frac{dy}{dx} = 0$$

$$\frac{dy}{dx} = \frac{8-2x}{2y+14}$$

passing through $(1,0)$

$$\frac{dy}{dx} = m = \frac{8-2}{14} = \frac{+6}{14} = \frac{3}{7}$$

$m = +3/7$ at point $(1,0)$

$$\frac{3}{7} = \frac{y-0}{x-1} = \frac{y-y_1}{x-x_1}$$

$$3x - 3 = 7y$$

$$7y - 3x + 3 = 0$$