

ELECT-ELECT

$$5x^2 + y^2 = 5 \quad \dots \textcircled{1}$$

$$x^2 + y^2 = 4 \quad \dots \textcircled{2}$$

By elimination method

$$\frac{4x^2}{4} = \frac{1}{4}$$

$$x^2 = \frac{1}{4}$$

$$x = \pm \sqrt{\frac{1}{4}} = \pm 0.5$$

Using the positive value and substituting

$$5x^2 + y^2 = 5$$

$$5(0.5)^2 + y^2 = 5$$

$$\frac{5}{4} + y^2 = 5$$

$$y^2 = 5 - \frac{5}{4}$$

$$y = \pm \sqrt{\frac{15}{4}}$$

$$= \pm 1.93$$

$$\therefore y = 1.93 \quad x = 0.5$$

Find dy/dx of eqn $\textcircled{1}$ and $\textcircled{2}$

$$\textcircled{1} \quad 5x^2 + y^2 = 5$$

$$\frac{dy}{dx} = -\frac{10x}{2y}$$

$$\textcircled{2} \quad x^2 + y^2 = 4$$

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

Substituting the values of x and y

$$-\frac{10 \cdot 0.5}{2 \cdot 1.93} = -\frac{10 \cdot 0.5}{3.86} = -1.295$$

$$-\frac{2x}{2y} = -0.25$$

Since $dy/dx = \tan \theta$

$$\therefore \theta = \tan^{-1}(dy/dx)$$

$$\theta_2 = \tan^{-1}(-0.25)$$

$$\theta_1 = \tan^{-1}(-1.295) = -52.32$$

$$= -14.52$$

$$\therefore \theta = |\theta_1 - \theta_2| = | -52.32 - (-14.52) |$$

$$= 37.8^\circ$$

$$f(x) := \sqrt{5 - 5x^2} \qquad g(x) := \sqrt{4 - x^2}$$

