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Elect / Elect

18 / ENGG04 / 020

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

$$x^2 + y^2 = 4$$

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

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

$$4x^2 = -1$$

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

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

Sub 2 into 1 to get

$$5(\frac{1}{4}) + y^2 = 5$$

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

$$y^2 = 5 - \frac{5}{4} = \frac{20-5}{4} = \frac{15}{4}$$

$$y = \sqrt{\frac{15}{4}} = y = \frac{\sqrt{15}}{2}$$

Differentiate eqn(1)

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

$$10x + 2y \frac{dy}{dx} = 0$$

$$\frac{5y}{x} \frac{dy}{dx} = -10x$$

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

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

$$\frac{dy}{dx} = -\frac{2(\frac{1}{2})}{\frac{\sqrt{15}}{2}}$$

$$\frac{dy}{dx} = -\frac{1}{\sqrt{15}}$$

$$= -1/241$$

$$\tan \theta = \frac{dy}{dx}$$

$$\theta = \tan^{-1} \frac{dy}{dx}$$

$$\theta = \tan^{-1} (-1/241)$$

$$= 52.239^\circ$$

Differentiate 2

$$x^2 + y^2 = 4$$

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

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

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

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

$$\frac{dy}{dx} = -\frac{(1/2)}{\sqrt{15}/2} = -0.25$$

$$\tan \theta = \frac{dy}{dx}$$

$$\theta = \tan^{-1} \frac{dy}{dx}$$

$$\theta = \tan^{-1} (-0.258)$$

$$\theta = -14.4775$$

$$\theta_1 - \theta_2 = -52.239 + 14.4$$

$$= -37.7615^\circ$$

$$=$$

