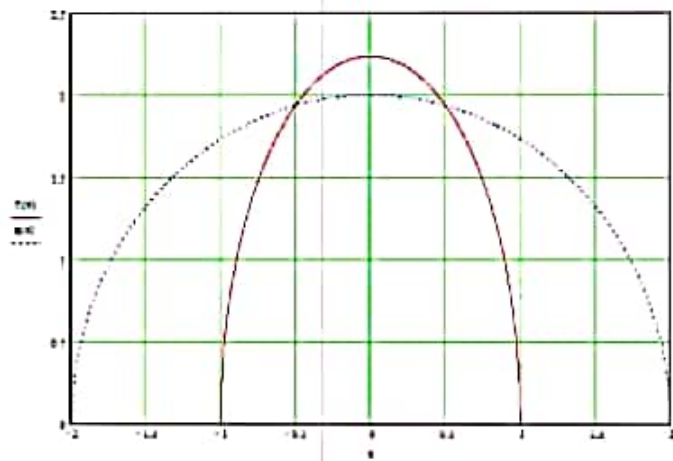


$$f(x) = \sqrt{1 - 3x^2}$$

$$g(x) = \sqrt{1 - x^2}$$



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$$5x^2 + y^2 = 5 \quad \text{--- (1)}$$

$$x^2 + y^2 = 4 \quad \text{--- (2)}$$

Solve simultaneously

$$1 \times 5x^2 + y^2 = 5$$

$$1 \times x^2 + y^2 = 4$$

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

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

$$4x^2 = 1$$

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

$$x^2 = \frac{1}{4} \Rightarrow x = \sqrt{1/4} = \pm 1/2$$

Substitute $x = 1/2$ in equation 2

$$(1/2)^2 + y^2 = 4$$

$$1/4 + y^2 = 4$$

$$y^2 = 4 - 1/4$$

$$y^2 = 3^{3/4}$$

$$y = \sqrt{3^{3/4}}$$

$$y = \pm \sqrt{15/2}$$

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

Differentiate equ. (1)

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

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

$$\frac{2y \frac{dy}{dx}}{2y} = \frac{-10x}{2y} = \frac{-5x}{y}$$

Substitute $x = 1/2$ and $y = \pm \sqrt{15/2}$

$$\frac{dy}{dx} = \frac{-5(1/2)}{\sqrt{15/2}} = -1.291$$

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

$$\theta_1 = \tan^{-1} \frac{dy}{dx}$$

$$\theta_1 = \tan^{-1} (-1.291)$$

$$= -52.239$$

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

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

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

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

$$= \frac{-1/2}{\sqrt{15/2}} = -0.258$$

$$\frac{dy}{dx} \tan \theta_2 = \frac{dy}{dx}$$

$$\theta_2 = \tan^{-1} \frac{dy}{dx} = -14.4775$$

$$\begin{aligned} \theta_2 - \theta_1 &= -52.239(-) - 14.775 \\ &= -52.239 + 14.4775 \\ &= -37.7615 \end{aligned}$$

$$\begin{aligned} |\theta_2 - \theta_1| &= 37.7615^\circ \\ &\approx 37.76^\circ \end{aligned}$$