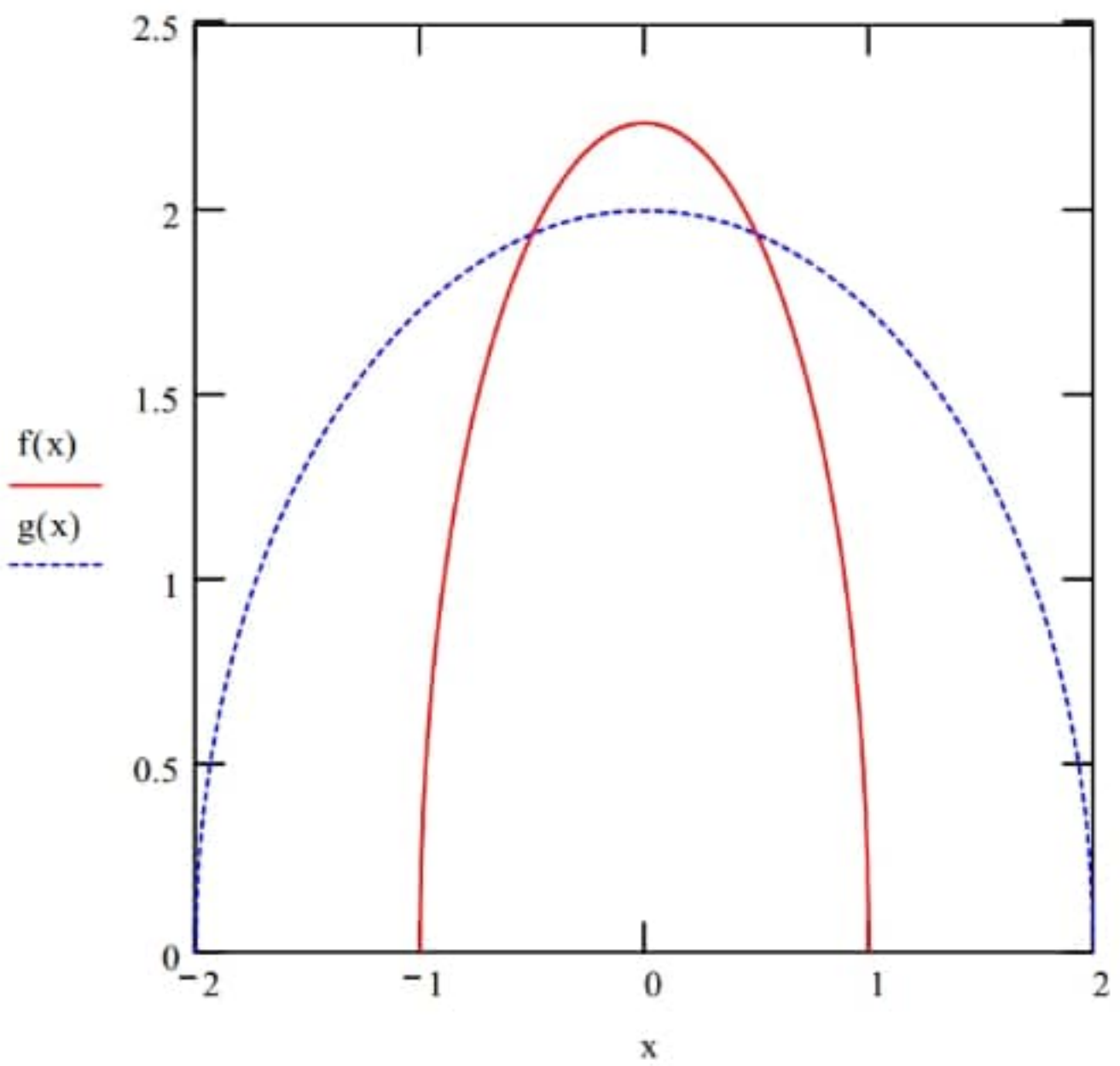


$$g(x) := \sqrt{4 - x^2}$$

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



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

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

Solve it simultaneously

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

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

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

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

$$4x^2 = 1$$

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

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

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

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

Substitute  $x = \frac{1}{2}$  in equation (2)

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

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

$$y^2 = 4 - \frac{1}{4}$$

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

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

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

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

Differentiate equation (1)

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

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

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

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

$$= \frac{-5x}{y}$$

$$= \frac{-5x}{y}$$

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

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

$$= -1.291$$

$$= -1.291$$

$$\tan \theta_1 = \frac{dy}{dx}$$

$$\frac{dy}{dx}$$

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

$$\frac{dy}{dx}$$

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

$$= -52.239^\circ$$

Differentiate equation (2)

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

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

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

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

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

$$= -0.258$$

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

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

$$\theta_2 = \tan^{-1} \frac{dy}{dx} = -14.49775^\circ$$

$$\theta_2 = \theta_1 = -52.239^\circ - 14.49775^\circ$$

$$= -52.239 + 14.49775$$

$$\theta_2 = -37.7415^\circ$$

$$\theta_2 = -37.7415^\circ$$

$$|\theta_2 - \theta_1| = 37.7415^\circ$$

$$\approx 37.74^\circ$$