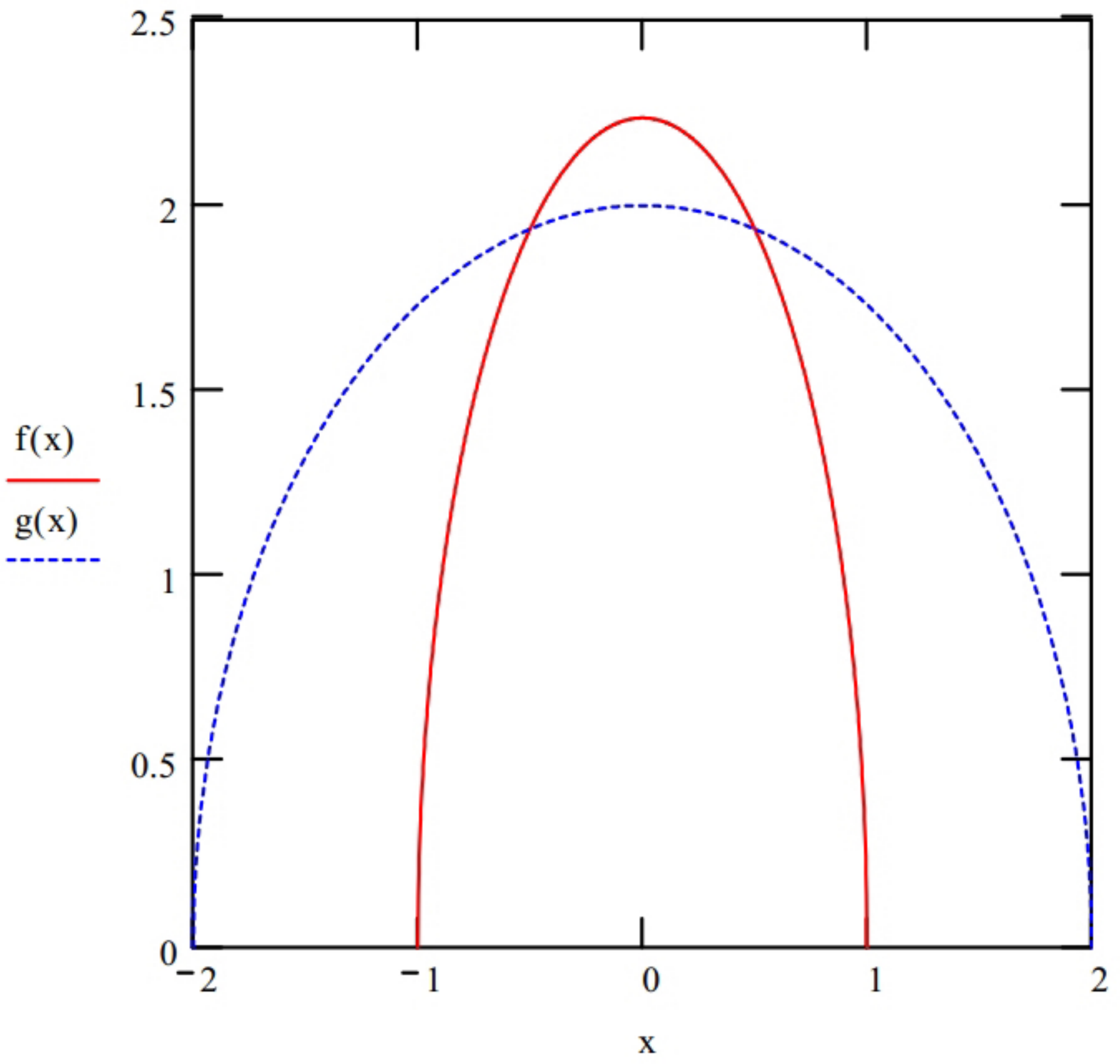


$$g(x) := \sqrt{4 - x^2}$$

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



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

$$x^2 + y^2 = 4 \quad \dots 2$$

solve it simultaneously

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

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

$$= 4x^2 = 1$$

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

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

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

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

Substitute $x = \frac{1}{2}$ in eqn 2

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

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

$$y^2 = \frac{3^3}{4}$$

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

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

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

Differentiate equation 1

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

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

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

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

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

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

$$= -\frac{5}{\sqrt{15}} = -1.291$$

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

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

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

$$= -52.239$$

Differentiate eqn 3

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

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

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

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

$$-\frac{1}{2} = -0.258$$

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

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

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

$$\theta_2 - \theta_1 = -52.239 - (-14.4775)$$

$$= -52.239 + 14.4775$$

$$\cos \theta = -37.7615$$

$$|\theta_2 - \theta_1| = 37.7615$$

$$\approx 37.76^\circ$$