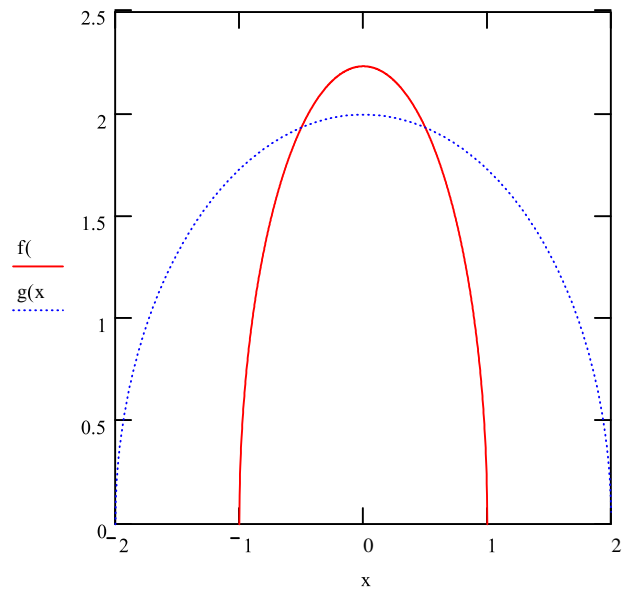


$$G(x) := \sqrt{4 - x^2}$$

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



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

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

$$= -1.291$$

$$\tan \theta = dy/dx$$

$$\theta_1 = \tan^{-1}(dy/dx)$$

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

$$= 52.239$$

differentiate eqn ②

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

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

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

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

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

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

$$\theta_2 = \tan^{-1}\left(\frac{dy}{dx}\right) = -14.4715$$

$$\theta_2 - \theta_1 = -14.4715 - 52.239$$

$$= -66.7057$$

$$|\theta_2 - \theta_1| = |-14.4715 - 52.239|$$

$$= 66.7057$$

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$$5x^2 + y^2 = 5 \quad \text{--- ①}$$

$$x^2 + y^2 = 4 \quad \text{--- ②}$$

solution

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

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

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

Divide through by 4

$$\frac{5x^2}{4} = \frac{5}{4}$$

$$x = \sqrt{\frac{5}{4}}$$

$$x = \frac{\sqrt{5}}{2}$$

Substitute x in the equation

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

$$\left(\frac{\sqrt{5}}{2}\right)^2 + y^2 = 4$$

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

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

$$y^2 = \frac{16 - 5}{4}$$

$$y = \sqrt{\frac{11}{4}}$$

then $\frac{dy}{dx}$

Differentiate equation ①

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