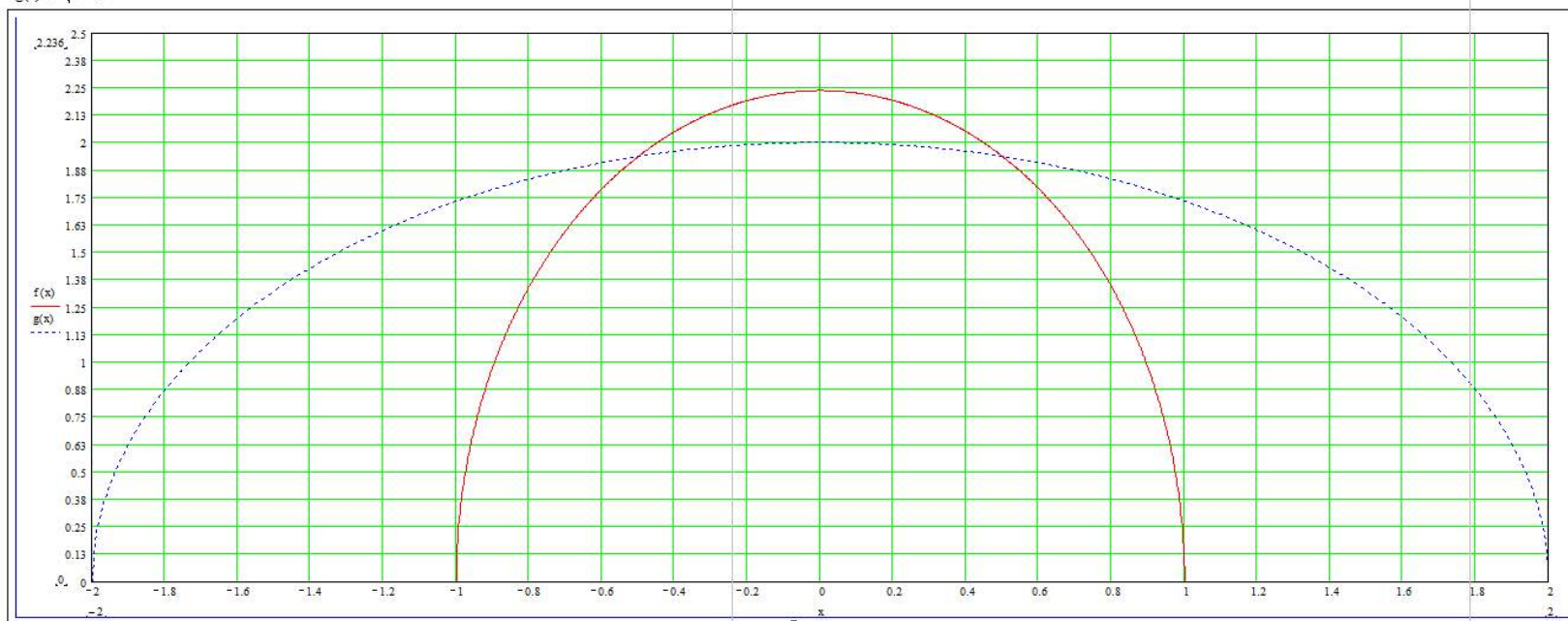


$$f(x) := \sqrt{5 - 5x^2}$$

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



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

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

Solve simultaneously using substitution

$$y^2 = 5 - 5x^2$$

Substitute in eqn (ii)

$$x^2 + 5 - 5x^2 = 4$$

$$x^2 - 5x^2 = 4 - 5$$

$$-4x^2 = -1$$

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

$$x^2 = \frac{1}{4}; \quad x = \sqrt{1/4}$$

$$x = 1/2 //$$

Substitute x in eqn (ii)

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

$$1/4 + y^2 = 4; \quad y^2 = 4 - 1/4$$

$$y^2 = \frac{16-1}{4}; \quad y^2 = 15/4 \quad y = \sqrt{15/4} \text{ or } y = 1.9365$$

Differentiate eqn (i) & (ii) implicitly

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

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

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

$$\frac{dy}{dx} = \frac{-10(1/2)}{2(\sqrt{15/4})}$$

$$\frac{dy}{dx} = \frac{-5}{\sqrt{5}}$$

$$\theta = \tan^{-1}\left(\frac{-5}{\sqrt{5}}\right)$$

$$\theta = -52.238 //$$

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

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

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

$$\frac{dy}{dx} = -1/\sqrt{5};$$

$$\theta = \tan^{-1}\left(\frac{1}{\sqrt{5}}\right)$$

$$\theta = -14.48 //$$