

UGWUOKE CHUKWUDUMEBI DAVID
 ELECTRICAL/ELECTRONICS ENGINEERING
 18ENGG041074
 ENG 281 ASSIGNMENT

$$5x^2 + y^2 = 5 \dots \text{eq. ①}$$

$$x^2 + y^2 = 4 \dots \text{eq. ②}$$

using equation ② $y^2 = 4 - x^2 \dots \text{eq. ③}$

substituting eq. ③ into eq. ①

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

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

$$4x^2 = 1$$

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

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

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

$$x_1 = +\frac{1}{2}$$

$$x_2 = -\frac{1}{2}$$

substituting x into eq. ③

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

$$y = \pm \sqrt{3.75} \Rightarrow \pm 1.94$$

$$y_1 = 1.94, y_2 = -1.94$$

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

For equation ①

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

$$\frac{dy}{dx} \Rightarrow \frac{-10x}{2y} \Rightarrow \frac{-5x}{y} \Rightarrow \frac{-5(\frac{1}{2})}{1.94} = 1.29$$

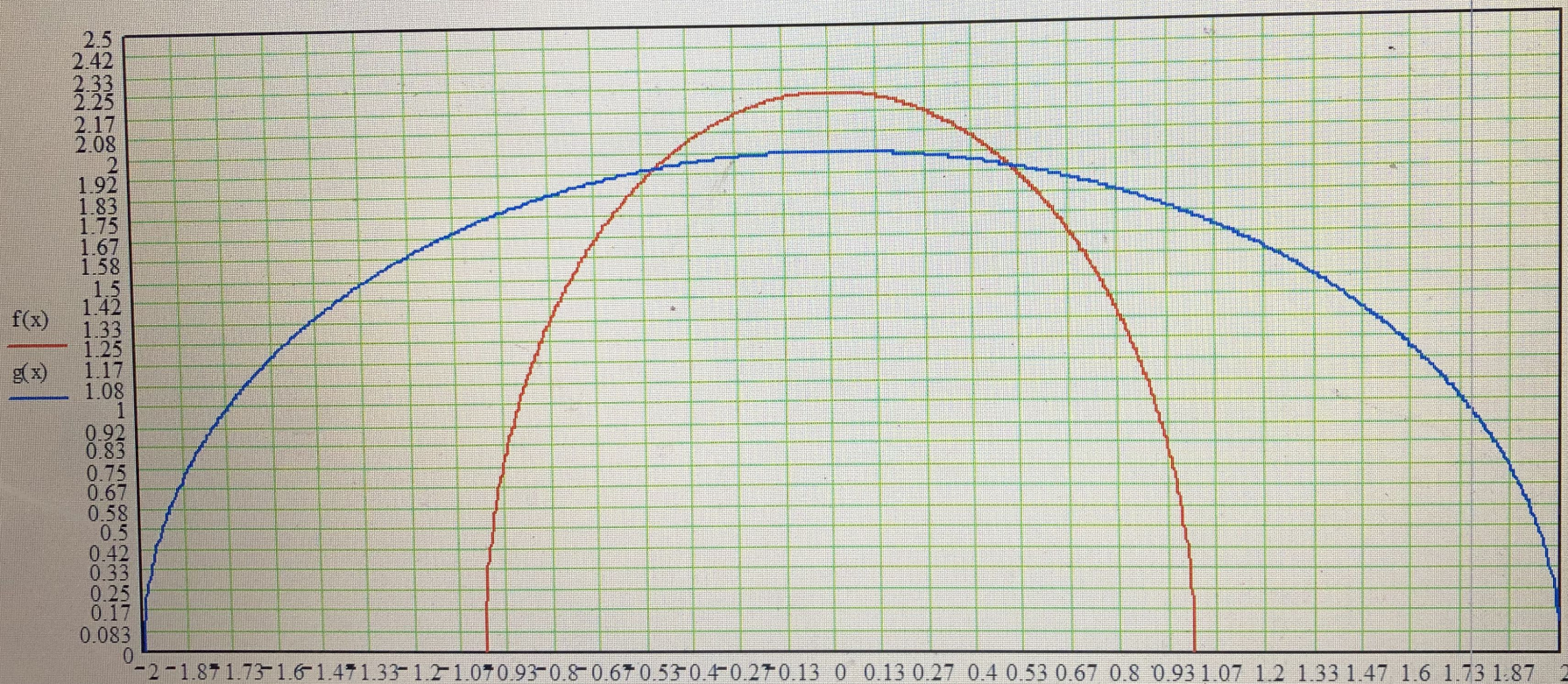
$$\tan^{-1}(1.29) = \theta \quad \theta_1 = -52.220 + 180 \Rightarrow 127.78^\circ$$

For equation ②

$$\frac{dy}{dx} \Rightarrow 2x + 2y \frac{dy}{dx} \Rightarrow \frac{dy}{dx} = -\frac{2x}{2y} = -\frac{x}{y} = \frac{-\frac{1}{2}}{1.94} = 0.2577$$

$$\tan^{-1}(-0.2577) = \theta_1 = \theta_2 = -14.45 + 180 = 165.55$$

$$g(x) := \sqrt{4 - x^2} \quad f(x) := \sqrt{5 - 5x^2}$$



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