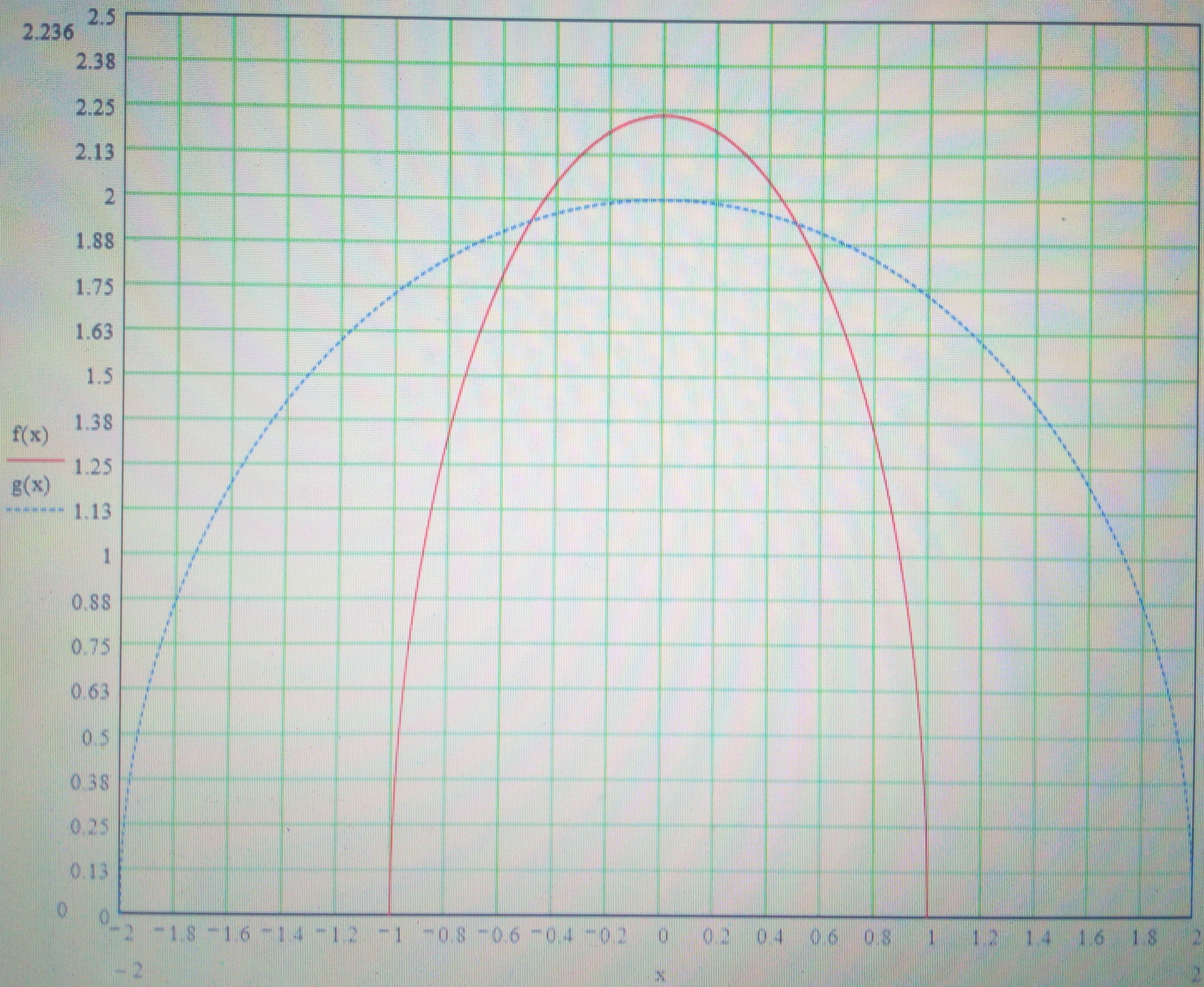


IMG_20191019_233639.jpg

IMG_20191020_005916_2.jpg



Angle of intersection
Angle (θ)

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

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

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

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

substituting x only

$$\frac{dy}{dx} = -\frac{5(\frac{1}{2})}{\sqrt{15/2}} = -1.2916$$

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

$$\tan \theta_1 = -1.2916$$

$$\theta_1 = \tan^{-1}(-1.2916)$$

$$\theta_1 = -52.21^\circ$$

Angle (θ_2)

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

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

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

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

substituting x/y

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

$$\tan \theta_2 = -\frac{1}{2}$$

$$\theta_2 = \tan^{-1}\left(-\frac{1}{2}\right)$$

$$\theta_2 = -26.56^\circ$$

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

$$\tan \theta_2 = -0.2582$$

$$\theta_2 = \tan^{-1}(-0.2582)$$

$$\theta_2 = -14.41^\circ$$

$$\theta = \theta_1 - \theta_2$$

$$= -52.21 - (-14.41)$$

$$= -37.76^\circ$$

NAME: Geoffrey Chino Eneke Paul

MAT NO: 18 (EN902) (04.1)

DEPT: Computer Engineering

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

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

$$\Rightarrow \text{eqn (1)} - \text{eqn (2)}$$

$$4x^2 = 1$$

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

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

Substituting x in eqn (2)

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

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

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

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

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

$$y = 1.9365$$

co-ordinates of point of intersection

$$(x, y) = \left(\frac{1}{2}, \frac{\sqrt{15}}{2}\right) = (0.5, 1.9365)$$

In order to plot the graph, we make y the subject of the formula for both eqn.

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

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

$$y = \sqrt{5 - 5x^2}$$

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

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

$$y = \sqrt{4 - x^2}$$