

Normal

Arial

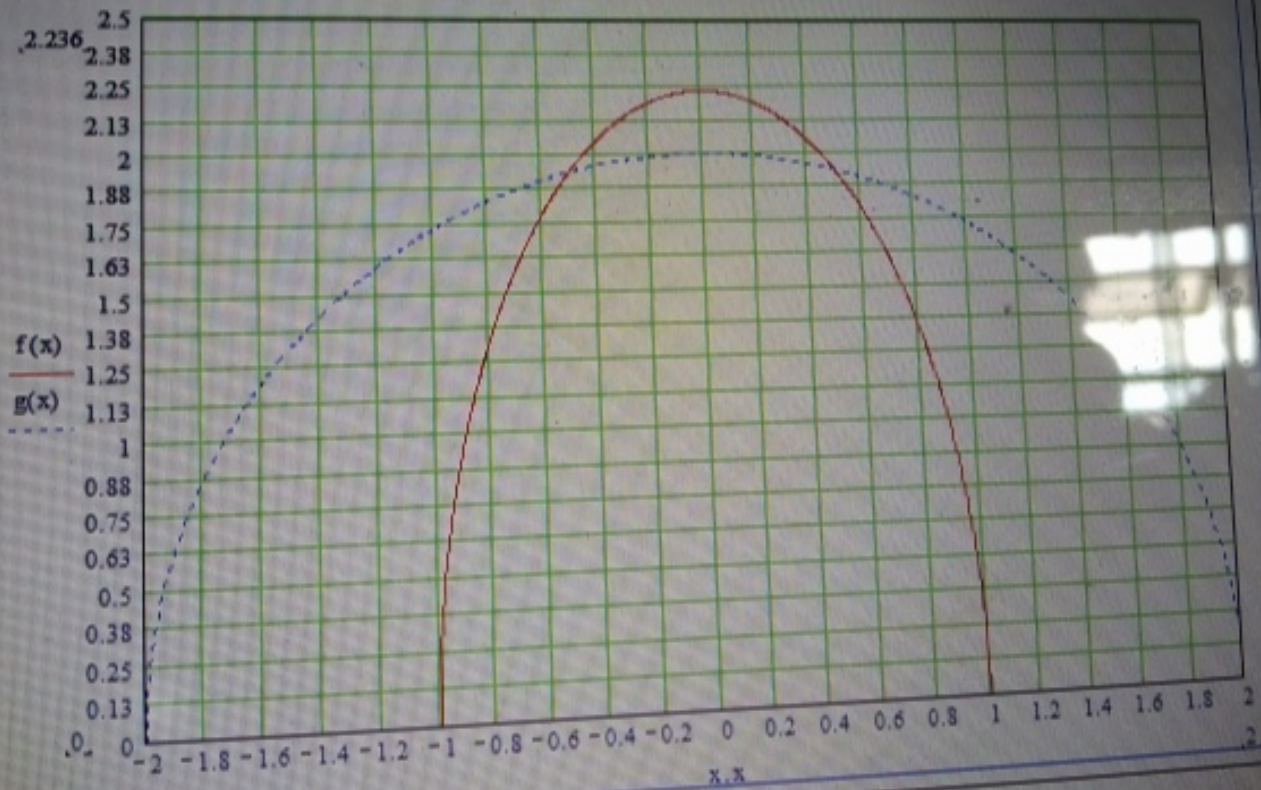
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100%

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

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



SHOT ON REDMI 7  
AI DUAL CAMERA

Use Simultaneous

19/10/2020

Effect Effect

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

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

Solve it Simultaneously

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

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

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

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

$$4x^2 = 1$$

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

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

Substitute  $x$  for  $\frac{1}{2}$  in Equation (1)

$$5\left(\frac{1}{2}\right)^2 + y^2 = 5$$

$$5 \times \frac{1}{4} + y^2 = 5$$

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

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

$$y^2 = \frac{20-5}{4} = \frac{15}{4}$$

$$\sqrt{y^2} = \sqrt{\frac{15}{4}}$$

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

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

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

$$= -1.291$$

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

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

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

$$= -52.239$$

Differentiate 2

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

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

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

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

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

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

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

$$\theta = \tan^{-1} (-0.258)$$

$$\theta = -14.4775$$

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

$$= -37.7615$$