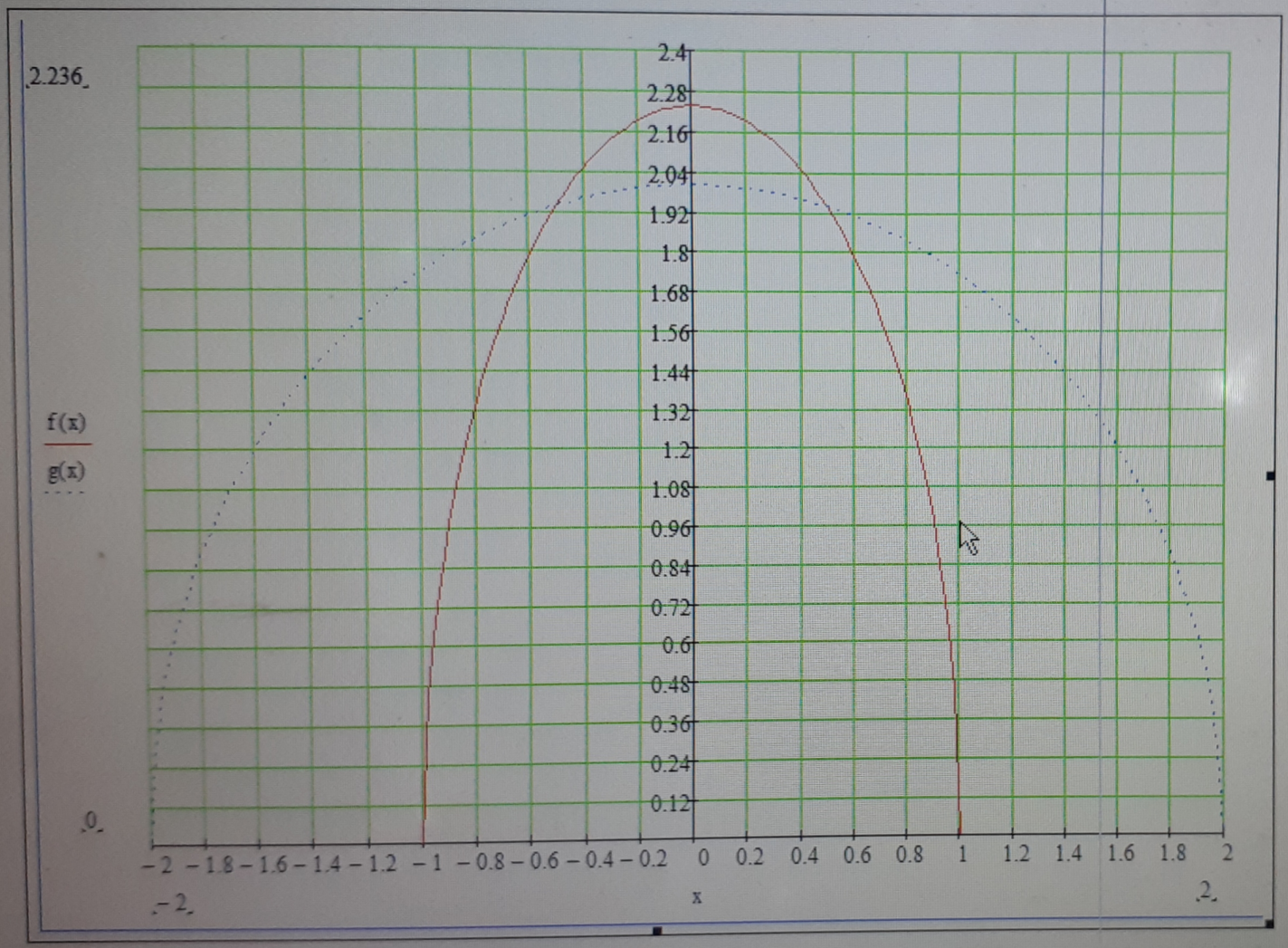
$f(x) := \sqrt{5 - 5x^2}$ $g(x) := \sqrt{4 - x^2}$



Press F1 for help.

QUADRI JOHN OBAJUWON.
18/ENG04/070

$5x^2 + y^2 = 5$ ——(i)

$x^2 + y^2 = 4$ ——(ii)

$4x^2 = 1$

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

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

$x = \pm\frac{1}{2} = \pm 0.5$

Recall: take x to be +ve i.e. $x = \frac{1}{2}$

Put x into (ii)

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

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

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

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

$y = \frac{\sqrt{15}}{2} = 1.94$

To get angle 1 we differentiate eqn 1

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

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

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

$\frac{dy}{dx} = \frac{-10x}{2y} = \frac{-5x}{y}$

$\frac{dy}{dx} = \frac{-5(0.5)}{1.94}$

$\frac{dy}{dx} = \frac{-2.5}{1.94} = -1.29$

$\frac{dy}{dx} = \tan\theta_1 = -1.29$

$\tan^{-1}(-1.29) = -52.22^\circ$

$\frac{dy}{dx}$ to get angle 2 differentiate eqn 2

$x^2 + y^2 = 4$

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

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

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

$= \frac{-2(0.5)}{2(1.94)}$

$= \frac{-1}{3.88} = -0.258$

$\frac{dy}{dx} = \tan\theta_2 = -0.258$

$\tan^{-1}(-0.258) = -14.467^\circ$

⇒ The angle between the two curves

$\theta = \theta_2 - \theta_1$

$\theta = -14.467^\circ - (-52.22^\circ)$

$\theta = 37.753^\circ$