TAIWO AJIBOLA EMMANUEL

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CHEMICAL ENGINEERING

ENGINEERING MATH

1) $5x^2 + y^2 = 5$

$x^2 + y^2 = 4$

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

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

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

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

$x^2 + y^2 = 4$

$y^2 = 4 - x^2$

$y = \sqrt{4 - x}$

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

Magnitude of Angle for which x & y are positive

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

$x^2 + y^2 = 4$

$4x^2 = 1$

$x = \sqrt{1/4} = 0.5$

$x^2 + y^2 = 4$

$(0.5)^2 + y^2 = 4$

$y^2 = 4 - 1/4$

$y = \sqrt{15/4} = 1.94$

Angle found by 1st curve

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

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

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

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

$\frac{dy}{dx} = \frac{-10}{2(1.94)} = -2.58$

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

$\tan\theta = -2.58$

$\theta = \tan^{-1}(-2.58)$

$\theta_1 = -68.81°$

Angle found by 2nd cur

$x^2 + y^2 = 4$

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

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

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

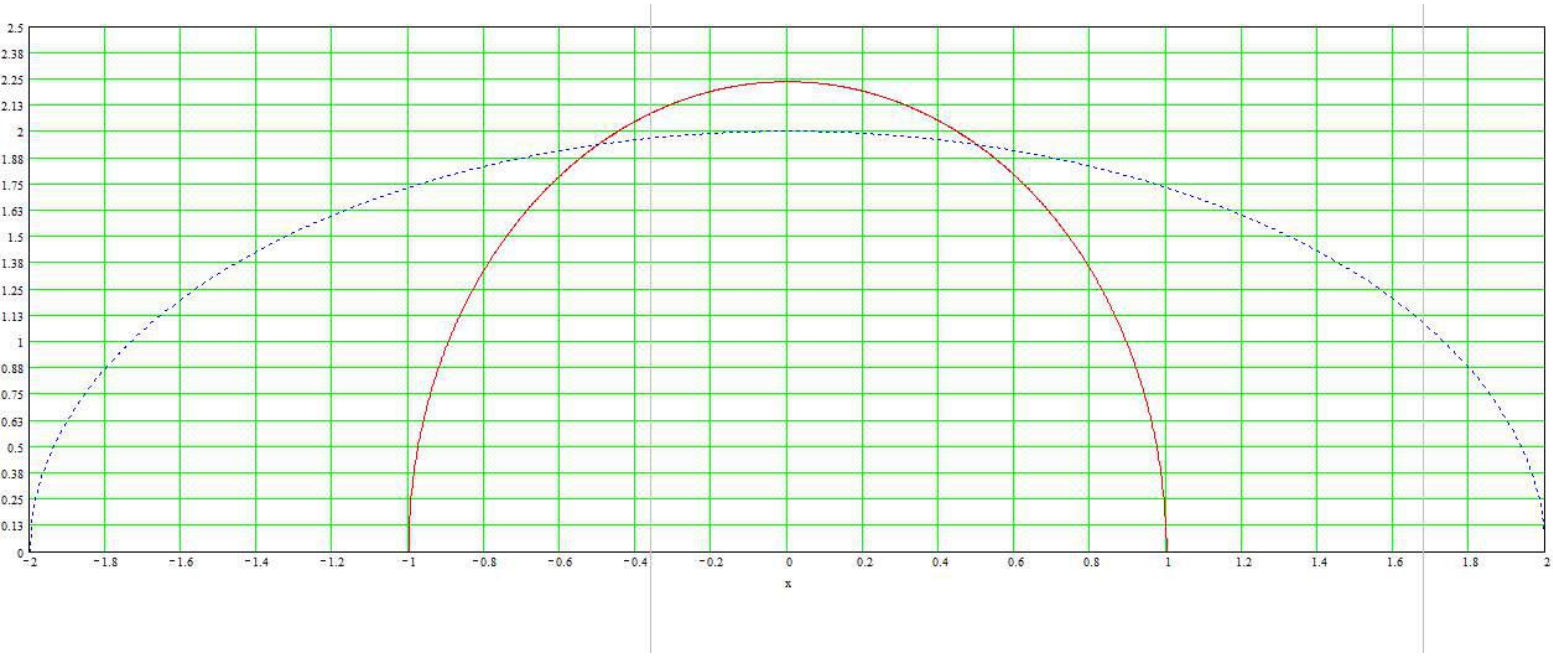
Put $x = 0.5$ &

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

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

$\theta = \tan^{-1}$

$\theta_2 = -1$


2.5
2.38
2.25
2.13
2
1.88
1.75
1.63
1.5
1.38
1.25
1.13
1
0.88
0.75
0.63
0.5
0.38
0.25
0.13
0
−2
−1.8
−1.6
−1.4
−1.2
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
x