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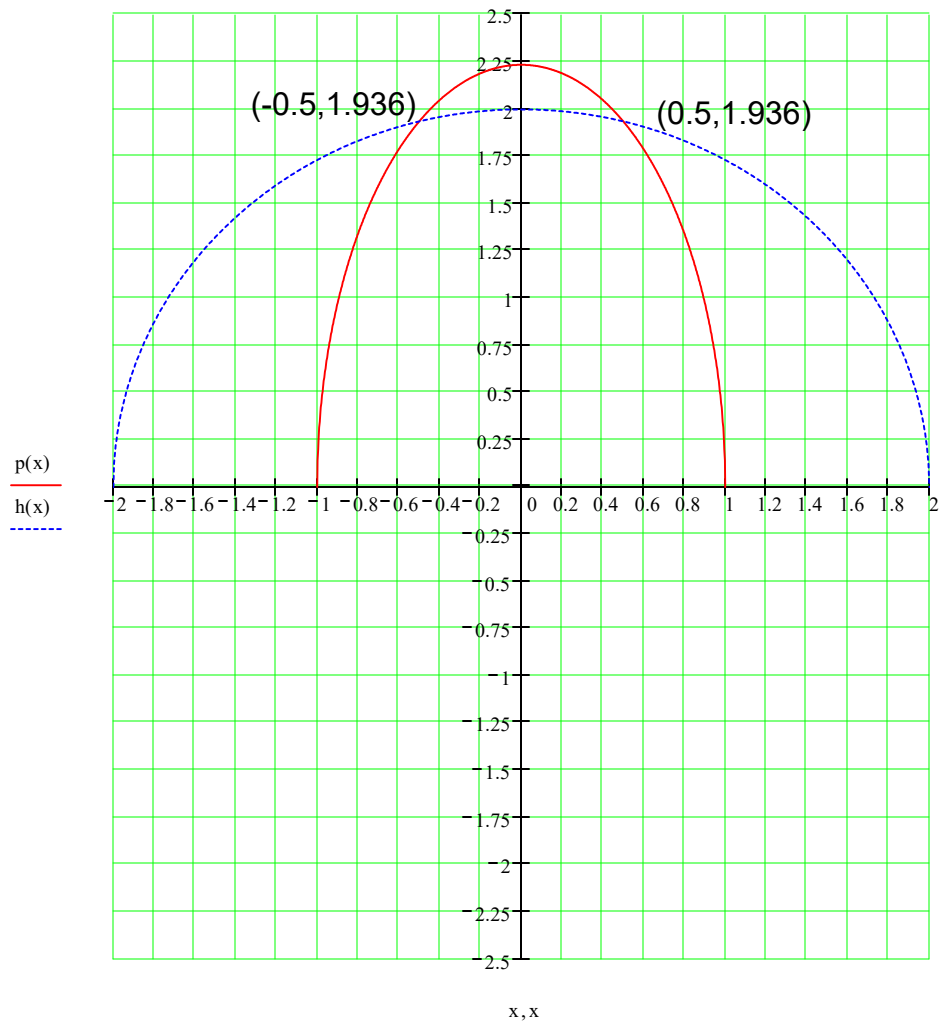
DEPARTMENT; MECHANICAL ENGINEERING

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Equation given are;  $5x^2 + y^2 - 5$  and  $x^2 + y^2 - 4$

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

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



To find the angle of intersection we need to find the slope of both curves; so we differentiate

$$\text{ImplicitDifferentiation}(U) := \text{simplify} \left( \frac{\frac{d}{dx} - U}{\frac{d}{dy} - U} \right) \quad \text{since they are implicit functions we differentiate implicitly}$$

$$f(x, y) := \text{ImplicitDifferentiation}(5x^2 + y^2 - 5) \rightarrow -5 \cdot \frac{x}{y}$$

$$g(x, y) := \text{ImplicitDifferentiation}(x^2 + y^2 - 4) \rightarrow \frac{-x}{y}$$

$$f(0.5, 1.936) = -1.291$$

Recall that  $dy/dx = \tan x$

$$g(0.5, 1.936) = -0.258$$

$$\text{atan}(-0.258) - \text{atan}(-1.291) = 37.772 \text{ deg}$$

Therefore the angle of intersection where  $x$  and  $y$  are positive on the graph above is  $37.772^\circ$