

Objective: Find the differential of a function using differentiation formulas.

Find the differential dy of the function $y = \sqrt{36 - x^2}$.

ANSWER:

$$y = \sqrt{36 - x^2} = (36 - x^2)^{\frac{1}{2}}$$

$$\frac{dy}{dx} = \frac{1}{2}(36 - x^2)^{-\frac{1}{2}}(-2x)$$

$$\frac{dy}{dx} = (36 - x^2)^{-\frac{1}{2}}(-x)$$

$$\frac{dy}{dx} = -\frac{x}{\sqrt{36 - x^2}}$$

$$dy = -\frac{x}{\sqrt{36 - x^2}} dx$$