

Objective: Find the derivative of a trigonometric function.

Find the derivative of the function $f(x) = \frac{\sec x}{x}$.

ANSWER:

$$f(x) = \frac{\sec x}{x} = (\sec x)(x^{-1})$$

$$f'(x) = (\sec x) \frac{d}{dx} x^{-1} + x^{-1} \frac{d}{dx} (\sec x)$$

$$f'(x) = (\sec x) - 1x^{-2} + x^{-1}(\sec x \tan x)$$

$$f'(x) = -(\sec x)x^{-2} + x^{-1}(\sec x \tan x)$$

OR

$$f'(x) = -\frac{\sec x}{x^2} + \frac{\sec x \tan x}{x}$$