

## SECTION 3.6: DERIVATIVES OF LOGARITHMIC FUNCTIONS

1. Fill in the derivative rules below:

$$\frac{d}{dx} [\arcsin(x)] =$$

$$\frac{d}{dx} [\arccos(x)] =$$

$$\frac{d}{dx} [\arctan(x)] =$$

$$\frac{d}{dx} [\log_b(x)] =$$

$$\frac{d}{dx} [\ln(x)] =$$

2. Find the derivative of each function below:

(a)  $y = \ln(x^5)$

(b)  $y = (\ln x)^5$

(c)  $f(x) = 9x + 4 \arctan(3x) + 3 \ln(5x)$

(d)  $f(x) = x \log_2(x)$

(e)  $g(x) = \ln(x^2 + 1)$

3. Find  $\frac{dy}{dx}$  for  $y = \ln \left( \frac{x + \sin x}{x^2 - e^x} \right)^{1/2}$ .