

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) $y = \ln(5x)$

3. Find the derivative of each function below:

(a) $f(x) = x^2 \log_2(5x^3 + x)$

(b) $g(x) = \ln(x^2 \tan^2 x)$

4. Find $\frac{dy}{dx}$ for $y = \ln \sqrt{\frac{x+\sin x}{x^2-e^x}}$.

5. Find y' for each of the following:

(a) $y = \ln |x|$

(b) $y = \frac{e^{-x} \sin x}{\sqrt{1-x^2}}$

(c) $y = x^{\sqrt[3]{x}}$