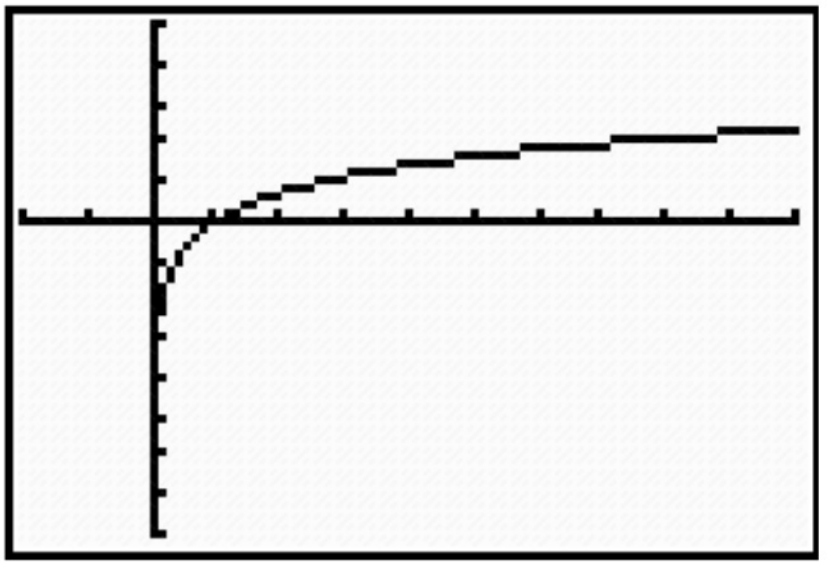
The Natural Logarithmic Function

$f(x) = \ln x$, where $x > 0$

- $\ln(1) = 0$
- $\ln(e) = 1$
- $\ln(ab) = \ln a + \ln b$
- $\ln(a/b) = \ln a - \ln b$
- $\ln(a^n) = n \ln a$



Expand

The Natural Logarithmic Function

Expand the logarithmic expressions:

1. $\ln(x^2/5)$
2. $\ln(3x^3y^4)$
3. $\ln(\sqrt{2}/x)$
4. $\ln(5y/x)^3$

Expand

Derivative of a Natural Log

$$\frac{d}{dx}[\ln(x)] = \frac{1}{x}, \text{ where } x > 0$$

Find the derivative of:

$$\ln(4x)$$

1 2 3 4 5 6

Derivative of a Natural Log

$d/dx[\ln(x)] = 1/x$, where $x > 0$

Find the derivative of:

$\ln(x^3 - x)$

1 2 3 4 5 6

Derivative of a Natural Log

$d/dx[\ln(x)] = 1/x$, where $x > 0$

Find the derivative of:

$x^2\ln(x)$

Derivative of a Natural Log

$d/dx[\ln(x)] = 1/x$, where $x > 0$

Find the derivative of:

$\ln(x-2)^4$

1 2 3 4 5 6

Derivative of a Natural Log

$$d/dx[\ln(x)] = 1/x, \text{ where } x > 0$$

Find the derivative of:

$$\ln \frac{x(3x-4)^3}{x^3-1}$$

1 2 3 4 5 6

Derivative of a Natural Log

$$\frac{d}{dx}[\ln(x)] = \frac{1}{x}, \text{ where } x > 0$$

Find the derivative of:

$$\ln|\cot x|$$

1 2 3 4 5 6

Homework:
p. 329# 41-69 odd, 71, 77, 79, 83