

**MODULE 7****EXPONENTIAL AND  
LOGARITHMIC FUNCTIONS**

Name: \_\_\_\_\_ Points: \_\_\_\_\_

**Exercise 1.** Evaluate the logarithms.

(a)  $\log_6(36) =$

(b)  $\log_{0.2}(125) =$

(c)  $\log_4(8) =$

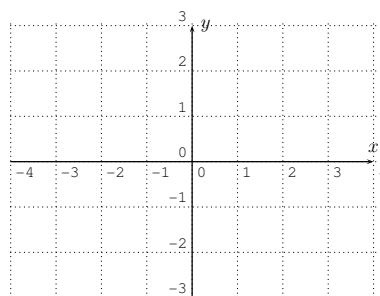
(d)  $\log_7(14) =$

**Exercise 2.** Find the domain of the given function.

(a)  $f(x) = \log_2(8 - 6x)$

(b)  $f(x) = \ln(x^2 - 4)$

(c)  $f(x) = \log(x)$

Sketch the graph of  $f(x) = \log(x)$ :

(d)  $f(x) = \sqrt{\log(x)}$

(e)  $f(x) = \frac{1}{\log(x)}$

**Exercise 3.** Assume  $x, y, z > 0$ .

(a) Combine to one logarithm:

$$\frac{1}{2} \log_5(x) - 3 \log_5(y) - \log_5(z) =$$

(b) Expand in terms of  $u = \log_2(x)$ ,  $v = \log_2(y)$ ,  $w = \log_2(z)$ :

$$\log_2\left(\frac{z^2}{\sqrt{x \cdot y}}\right) =$$

(c) Combine to one logarithm: (Hint: use the change of base formula!)

$$\log_2(x) + \log_3(y) =$$

**Exercise 4.** Solve for  $x$ :

(a)  $3^{x+5} = 9^{x+1}$

(b)  $1.03^x = 6$

(c)  $20 \cdot 1.2^x = 37$

(d)  $\log_3(x - 2) + \log_3(x + 4) = 3$