

## Section 4.3

1. Solve the following equations. Give both the exact answer and the decimal approximation rounded to four decimal places.

a.  $\log_3(x+5) = 11$

b.  $3\ln(2x+1) = 18$

c.  $5 + \log(3x) = 2$

2. Give the domain and range of each of the following functions, and sketch the graph.

Function	Domain	Range	Graph
$f(x)=\log(x - 7)$			
$g(x)=\log(7 - x)$			
$h(x)=2e^{-.2x}$			
$k(x)= 2^x + 5$			

3. Consider the function  $f(x) = 20(0.45)^x$ . Round to three decimal places as needed.

- a. Write the correct letters in the blanks provided. Some choices may be used more than once, others not at all.

\_\_\_\_\_ What is the domain?

A. All real numbers

\_\_\_\_\_ What is the range?

B. All real numbers greater than zero

C. All real numbers greater than one

\_\_\_\_\_ For what values of  $x$  is  $f(x)$  increasing?

D. All real numbers between zero and one

E. All real numbers less than zero

\_\_\_\_\_ For what values of  $x$  is  $f(x)$  decreasing?

F. All real numbers less than one

G. Never

b. What is the vertical intercept? Give the ordered pair. \_\_\_\_\_

c. Give the equation of the horizontal asymptote of  $f(x)$ . \_\_\_\_\_

d. For what value of  $x$  is  $f(x)=10$ ?

4. Consider the function  $g(x) = \log_3(x)$ . Round to three decimal places as needed.

- a. Write the correct letters in the blanks provided. Some choices may be used more than once, others not at all.

\_\_\_\_\_ What is the domain?

A. All real numbers

\_\_\_\_\_ What is the range?

B. All real numbers greater than zero

C. All real numbers greater than one

\_\_\_\_\_ For what values of  $x$  is  $g(x)$  positive?

D. All real numbers between zero and one

E. All real numbers less than zero

\_\_\_\_\_ For what values of  $x$  is  $g(x)$  negative?

F. All real numbers less than one

G. Never

b. What is the horizontal intercept? \_\_\_\_\_

c. Is the graph of  $g(x)$  increasing or decreasing? \_\_\_\_\_

d. For what value of  $x$  will  $g(x) = 1$ ? \_\_\_\_\_

e.  $g(5) =$  \_\_\_\_\_

f.  $g(9) =$  \_\_\_\_\_

g. For what value of  $x$  will  $g(x) = 10$ ?