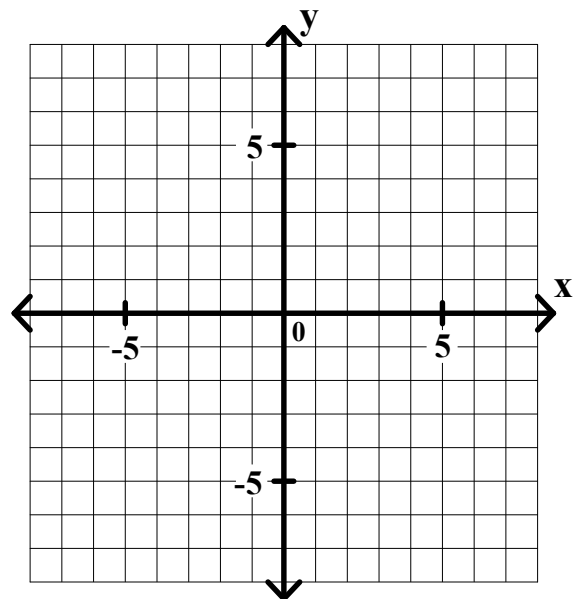


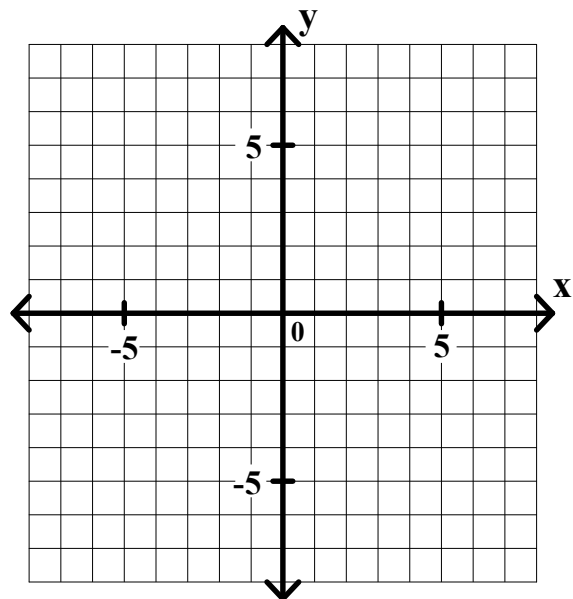
Precalculus Worksheet #1 Unit 3 page 1 \_\_\_\_\_

Sketch a graph of each of the following functions.

1.  $y = 3^x$



2.  $y = \log_3 x$



Find each of the following without using a calculator.

3.  $\log_5 125 = \underline{\hspace{2cm}}$

4.  $\log_5 0.04 = \underline{\hspace{2cm}}$

5.  $\log_9 243 = \underline{\hspace{2cm}}$

Solve each of the following equations, without using a calculator.

6.  $9^{(2x-3)} = 27^x$

7.  $\log_3 x + \log_3 (x - 6) = 3$

8.  $4^x = 0.25$

9.  $\log_3 (6x - 4) - \log_3 (2x - 1) = \log_3 (x + 1)$

## Precalculus Worksheet #1 Unit 3 page 2

Complete each of the following properties of logarithms.

10.  $\log_B 1 = \underline{\hspace{2cm}}$

11.  $\log_B B = \underline{\hspace{2cm}}$

12.  $\log_B (xy) = \underline{\hspace{3cm}}$

13.  $\log_B (x/y) = \underline{\hspace{3cm}}$

Let  $w = \log_B 2$ ,  $x = \log_B 3$ , and  $y = \log_B 5$ . Express each of the following in terms of  $w$ ,  $x$ , and/or  $y$ .

14.  $\log_B 6 = \underline{\hspace{2cm}}$

15.  $\log_B 125 = \underline{\hspace{2cm}}$

16.  $\log_B 0.4 = \underline{\hspace{2cm}}$

17.  $\log_B (3B^3) = \underline{\hspace{2cm}}$

Find each of the following. Round your answers to two decimal places.

18.  $\log_4 100 = \underline{\hspace{2cm}}$

19.  $\log_2 e^2 = \underline{\hspace{2cm}}$

Express each of the following as the log of a single expression.

20.  $2\ln x - \ln y + 5\ln z = \underline{\hspace{3cm}}$

21.  $.25(\log_2 x + \log_2 y) = \underline{\hspace{3cm}}$

Solve each of the following problems. (Show any equation you use to find your solution.)

22. \$1000 is invested at 6.5% per year compounded quarterly. What will the balance be after 20 years?

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## Precalculus Worksheet #1 Unit 3 page 3

Solve each of the following problems. (Show any equation you use to find your solution.)

23. \$1000 is invested at 9% per year compounded continuously. What will be the balance after 20 years?

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Solve each of the following equations. Express your solutions rounded to two decimal places.

24.  $e^x = 10$

25.  $\ln x = 1.75$

26.  $e^{(3x-2)} = 6$

27.  $\log x + \log(3x + 1) = 2$