

**Practice 8-5**

## HW: Lesson 5

## Exponential and Logarithmic Equations

Use the Change of Base Formula to evaluate each expression. Round answers to the nearest hundredth.

1.  $\log_2 12$   
 $\approx 3.58$

2.  $\log_3 40$   
 $\approx 3.36$

3.  $\log_4 8$   
 $\approx 1.5$

4.  $\log_5 3$   
 $\approx .68$

Solve each equation. Check your answer. Round answers to the nearest hundredth.

5.  $7^n = 12$   
 $n \approx 1.28$

6.  $5^{2x} = 20$   
 $x \approx .93$

7.  $8^{n+1} = 3$   
 $n \approx -.47$

8.  $4^{n-2} = 3$   
 $n \approx 2.79$

9.  $4^{3n} = 5$   
 $n \approx .39$

Solve each equation. Check your answer. Round answers to the nearest hundredth.

10.  $\log 3x = 2$

$x \approx 33.33$

11.  $2 \log x - \log 5 = -2$

$x \approx .22$

12.  $\log 8 - \log 2x = -1$

$x = 40$

13.  $\log(x + 21) + \log x = 2$

$x = 4$

14.  $8 \log x = 16$

$x = 100$

The function  $y = 1000(1.005)^x$  models the value of \$1000 deposit at 6% per year (0.005 per month)  $x$  months after the money is deposited.

15. Predict how many years it will be until the account is worth \$5000.

$27$  years

**Practice 8-6** HW: Lesson 5 (Continued)

Natural Logarithms

Use natural logarithms to solve each equation. Round answers to the nearest hundredth.

16.  $e^x = 15$

$x \approx 2.71$

17.  $e^{x+2} = 50$

$x \approx 1.91$

18.  $e^{x-4} = 2$

$x \approx 4.69$

19.  $4e^x = 10$

$x \approx 0.92$

20.  $4e^{3x-1} = 5$

$x \approx 0.41$

Solve each equation. Check your answer. Round answers to the nearest hundredth.

21.  $4 \ln x = -2$

$x \approx 0.61$

22.  $2 \ln(3x - 4) = 7$

$x \approx 2.37$

23.  $2 \ln x + \ln x^2 = 3$

$x \approx 2.12$

24.  $\ln x - \ln 5 = -1$

$x \approx 1.84$

25.  $\ln x + \ln 3x = 14$

$x \approx 33.14$