Name: _____ Date: _____ Row: _____ Period: _____

REVIEW WORKSHEET SECTIONS 8.1-8.4

YOU MUST SHOW ALL WORK ON A SEPARATE SHEET OF PAPER

Section 8.1 (#13, 15, 18, 19, 22, 24, 24, 26, 29)

Graph the function.

13. $y = 4^{x+2}$ **15.** $y = 3^x + 1$ **18.** $y = 2^{x-1} - 3$ **19.** $y = 2^{x+1} - 4$

Computer Usage **In Exercises 22–24, use the following information.**

From 1991 through 1995, the number of computers per 100 people worldwide can be modeled by $C = 25.2(1.15)^t$ where t is the number of years since 1991.

22. Identify the initial amount, the growth factor, and the annual percent increase.

24. Estimate the number of computers per 1000 people worldwide in 2000.

24. ***Account Balance*** You deposit $1000 in an account that earns 2.5% annual interest. Find the balance after 3 years if this interest is compounded with the given frequency.

a. monthly **b.** daily

College Tuition **In Exercises 26–29, use the following information.**

In 1990, the tuition at a private college was $15,000. During the next 9 years, tuition increased by about 7.2% each year.

26. Write a model giving the cost C of tuition at the college t years after 1990.

29. Estimate the tuition in 2010.

Section 8.2 (#1-3, 10, 12, 13, 15, 16, 25, 26, 29, 30)

Tell whether the function represents *exponential growth* or *exponential decay*.

1. $f(x) = \frac{1}{2}\left(\frac{5}{7}\right)^x$ **2.** $f(x) = \frac{1}{3}\left(\frac{7}{5}\right)^x$ **3.** $f(x) = 3(4)^{-x}$

Graph the function.

10. $y = 2\left(\frac{1}{2}\right)^x + 3$ **12.** $y = 3\left(\frac{1}{4}\right)^{x-1}$ **13.** $y = 2\left(\frac{1}{5}\right)^{x+3}$ **15.** $y = \left(\frac{1}{2}\right)^{x+2} + 1$

Value of the Dollar **In Exercises 16–18, use the following information.**

From 1990 through 1998, the value of the dollar has been shrinking. That is, you cannot buy as much with a dollar today as you could in 1990. The shrinking value can be modeled by $V = 1.24(0.973)^t$, where t is the number of years since 1990.

16. How much was a 1998 dollar worth in 1993?

Equipment Depreciation **In Exercises 25–28, use the following information.**

A tool and die business purchases a piece of equipment for $250,000. The value of the equipment depreciates at a rate of 12% each year.

25. Write an exponential decay model for the value of the equipment.

26. What is the value of the equipment after 5 years?

Stereo System **In Exercises 29 and 30, use the following information.**

You purchase a stereo system for $830. the value of the stereo system decreases 13% each year.

29. Write an exponential decay model for the value of the stereo system in terms of the number of years since the purchase.

30. What was the value of the system after 1 year?

Section 8.3 (#1-10, 11-19 odd, 24, 26, 27, 30, 31)

Use a calculator to evaluate the expression. Round the result to three decimal places.

1. e^5 **2.** $e^{-1/3}$ **3.** $e^{-1.4}$ **4.** $e^{\sqrt{2}}$

Tell whether the function is an example of *exponential growth* or *exponential decay*.

5. $f(x) = 2e^{3x}$ **6.** $f(x) = e^{-3x}$ **7.** $f(x) = 2e^{-3x}$

8. $f(x) = \frac{1}{5}e^{5x}$ **9.** $f(x) = \frac{1}{2}e^{-x}$ **10.** $f(x) = 4e^{5x}$

Simplify the expression.

11. $(e^4)^{-2}$ **13.** $\left(\frac{e}{2}\right)^{-1}$ **15.** $-3e \cdot 4e^2$ **17.** $\sqrt{64e^{4x}}$ **19.** $\frac{e}{e^{x+1}}$

Graph the function and identify the horizontal asymptote.

24. $f(x) = 2e^x$ **26.** $f(x) = e^x + 2$ **27.** $f(x) = e^{-3x} + 1$

Interest **In Exercises 30–32, use the following information.**

You deposit $1200 in an account that pays 5% annual interest. After 10 years, you withdraw the money.

30. Find the balance in the account if the interest was compounded quarterly.

31. Find the balance in the account if the interest was compounded continuously.

Section 8.4 (#1-9 odd, 10-14, 16, 17, 20, 21, 22-24)

Rewrite the equation in exponential form.

1. $\log_4 16 = 2$ **3.** $\log_2 1 = 0$ **5.** $\log_5 \frac{1}{5} = -1$

Use a calculator to evaluate the expression. Round the result to three decimal places.

7. $\ln \sqrt{3}$ **9.** $\ln\left(\frac{2}{3}\right)$

Evaluate the logarithm without using a calculator.

10. $\log_3 27$ **11.** $\log_4 1$ **12.** $\log_2 \frac{1}{2}$

13. $\log_8 2$ **14.** $\log_5 5^{2/3}$

Find the inverse of the function.

16. $f(x) = \log_3 x$ **17.** $f(x) = \ln x$ **20.** $f(x) = \log_2 (x - 1)$ **21.** $f(x) = \log_4 16x$

Graph the function.

22. $f(x) = \log_6 x$ **23.** $f(x) = 1 + \log_6 x$ **24.** $f(x) = \log_6 (x + 1)$