

Name: _____ Date: _____ Hour: _____

Algebra II Review 8.1 – 8.3

In problems 1 – 4, evaluate each function to the nearest hundredth for $x = -2, -1, 0, 1,$ and 2 . Graph each function.

1. $y = 2(0.3)^x$

2. $y = \frac{2}{3}(3)^x$

3. $y = 2\left(\frac{1}{5}\right)^x$

4. $y = \frac{1}{4}(2)^x$

5. A new car that sells for \$18,000 depreciates 25% each year. Write a function that models the value of the car. Find the value of the car after 4 yr.

6. The price of a new home is \$126,000 and appreciates 2% each year. Write a function that models the value of the home. Find the value of the home after 10 yr.

7. The bear population increases at a rate of 2% per year. There are 1573 bear this year. Write a function that models the bear population. How many bears will there be in 10 yr?

8. A tree 3 ft tall grows 8% each year. Write a function that models the height of the tree. How tall will the tree be at the end of 14 yr? Round your answer to the nearest hundredth.

In problems 9 – 12, write an exponential function $y = ab^x$ for a graph that includes the given points.

9. (0, 2), (1, 1.3)

10. (-1, 12.5), (4, 4.096)

11. (1, -8), (2, -32)

12. (2, 6400), (4, 4096)

In 13 and 14, Find the amount in a continuously compounded account for the given conditions:

13. Principal: \$5000
Annual interest: 6.9%
Time: 30 yr

14. Principal: \$20,000
Annual Interest: 3.75%
Time: 2 yr

15. HG-197 is used in kidney scans. It has a half-life of 64.128 h. Write the exponential decay function for a 12-mg sample. Find the amount remaining after 72 h.

16. I-123 is used in thyroid scans. It has a half-life of 13.2 h. Write the exponential decay function for a 45-mg sample. Find the amount remaining after 5 h.

17. Suppose you invest \$5000 at an annual interest of 6.9%, compounded monthly.

- a. How much will you have in the account after 10 years?
- b. Determine how much more you would have if the interest were compounded continuously.

18. Suppose you invest \$8,400 at an annual interest of 4.5%, compounded quarterly.

- a. How much will you have in the account after 10 years?
- b. Determine how much more you would have if the interest were compounded continuously.

In problems 19 – 21, write each equation in exponential form.

19. $\log_4 256 = 4$

20. $\log_5 125 = 3$

21. $\log_{17} 289 = 2$

In problems 22 – 24, write each equation in logarithmic form.

22. $9^2 = 81$

23. $5^4 = 625$

24. $6^{-3} = \frac{1}{216}$

In problems 25 – 28, evaluate each logarithm.

25. $\log_2 16$

26. $\log_2 8$

27. $\log_2 \frac{1}{8}$

28. $\log_{11} 121$

29. $\log 100,000$

30. $\log_{\frac{1}{4}} 32$

In 31 and 32, graph the following.

31. $y = \log_2 x$

32. $y = \log_3 x$