

Algebra 1
Chapter 6 Review

Name _____

Evaluate each expression.

1. 2^0	2. $(-3)^0$	3. 3^{-4}	4. $\frac{(-3)^2}{-8^0}$
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Simplify the expression. Write your answer using only positive exponents.

5. w^{-3}	6. h^0	7. $12x^{-5}y^0$	8. $(-4x^2y^3)^2$
9. $\frac{2^{-4}x^2}{z^0}$	10. $\frac{r^{-7}}{10^{-2}z^{-5}}$	11. $\frac{17x^{-1}y^{-10}}{7^{-2}z^0}$	12. $\frac{7x^3y^{-2}}{14x^0} \cdot \frac{2x^{11}y}{x^{-5}}$

Rewrite the expression in rational exponent form.

13. $\sqrt{8}$	14. $\sqrt[3]{18}$	15. $\sqrt[4]{x^5}$
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Rewrite the expression in radical form.

16. $24^{1/4}$	17. $x^{2/3}$	18. $140^{1/2}$
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Evaluate the expression.

19. $\sqrt[3]{729}$	20. $\sqrt[4]{625}$	21. $\sqrt[5]{-32}$
22. $512^{2/3}$	23. $(-256)^{5/8}$	24. $1024^{6/5}$

Evaluate the function for the given value of x.

25. $y = 4^x; x = -1$	26. $y = -3(7)^x; x = 4$	27. $f(x) = \frac{1}{4}(2)^x; x = -3$
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Determine whether the table represents a linear or an exponential function.

28.					29.				
x	1	2	3	4	x	1	2	3	4
y	1	8	27	64	y	9	2	-5	-12

Identify the initial amount a and the rate of growth r (as a percent) of the exponential function. Evaluate the function when $t = 6$. Round your answer to the nearest tenth.

<p>30. $f(t) = 250(1+0.05)^t$</p> <p>growth or decay?</p> <p>$a =$</p> <p>$r =$</p> <p>$f(6) =$</p>	<p>31. $f(t) = 5(1.2)^t$</p> <p>growth or decay?</p> <p>$a =$</p> <p>$r =$</p> <p>$f(6) =$</p>
<p>32. $f(t) = 7(1-0.13)^t$</p> <p>growth or decay?</p> <p>$a =$</p> <p>$r =$</p> <p>$f(6) =$</p>	<p>33. $f(t) = 1000(0.92)^t$</p> <p>growth or decay?</p> <p>$a =$</p> <p>$r =$</p> <p>$f(6) =$</p>

34. In 2009, you invested \$1500 in an account that pays 3% compounded monthly. What will be the balance in 2016?

Write an exponential growth or decay function that represents the situation.

35. A \$20,000 car decreases in value by 15% every year.
36. A newborn baby weighs 8 pounds and increases its weight by 5% every week.
37. A company profit of \$1,000,000 decreases by 50% every day.

Determine whether the sequence is arithmetic, geometric, or neither. Explain.

38. 180, 91, 45, ...	39. 1, 4, 16, 64, ...	40. 17, 23, 29, 35, ...
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Write an equation for the n th term of the geometric sequence. Then find a_9 .

41. 486, 162, 54, ... $a_n =$ $a_9 =$	42. 6, 12, 24, 48, ... $a_n =$ $a_9 =$
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Explicit	Recursive
$a_n = a_1 + (n-1)d$	$a_n = a_{n-1} + d$
$a_n = a_1(r)^{n-1}$	$a_n = r \cdot a_{n-1}$

Write an explicit rule for the recursive rule.

43. $a_n = a_{n-1} - 2$	44. $a_n = 7 \cdot a_{n-1}$
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Write a recursive rule for the explicit rule.

45. $a_n = 4n + 3$	46. $a_n = 2\left(\frac{1}{2}\right)^{n-1}$
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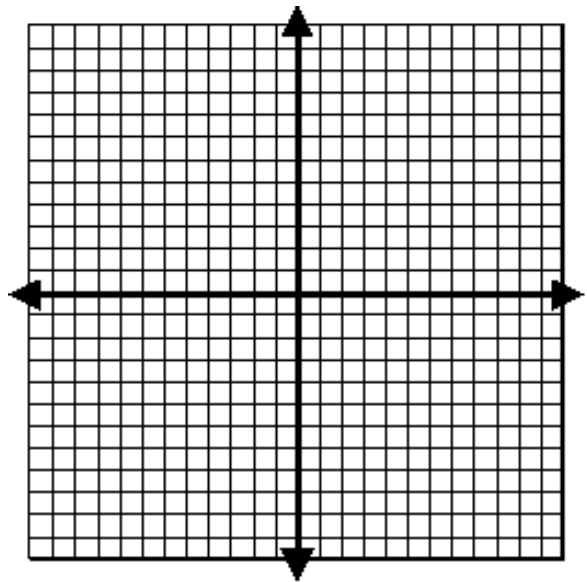
47. Write a recursive rule for the number of bacteria at time t , if after 1 minute, there is 1 bacterium. After 2 minutes, there are 3 bacteria. After 3 minutes, there are 9 bacteria. After 4 minutes, there are 27 bacteria.

Solve the equation. Check your solution.

48. $3^{6x} = 3^{18}$	49. $5^{2x+11} = 5^{-7}$
50. $(25)^{3x+6} = (125)^{4x}$	51. $3^{2x-1} = \frac{1}{3}$

52. Graph the function by creating a table of values. Use the graph to answer the following questions.

$$f(x) = \left(\frac{1}{2}\right)^x$$



State the domain of the function in interval notation.	State the range of the function in interval notation.	Write the equation of the asymptote.
How does $f(x) = \left(\frac{1}{2}\right)^x + 4$ differ from the graph of this function?	How does $f(x) = \left(\frac{1}{2}\right)^{x+3}$ differ from the graph of this function?	