Name: Key Date: Hour:

Algebra 1
WS Chapter 6 Test Review

Simplify the expression. Write your answer using only positive exponents.

1. $y^3 \cdot y^{-5}$ $y^{-2} = \boxed{\frac{1}{y^2}}$

2. $\frac{12x^4}{16x^7}$ $\boxed{\frac{3}{4x^3}}$

3. $(x^0y^2)^3$ $1^3y^6 = \boxed{y^6}$

4. $\left(\frac{2x^2}{5y^4}\right)^{-2}$ $\frac{2^{-2}x^{-4}}{5^{-2}y^{-8}} = \frac{5^2y^8}{2^2x^4} = \boxed{\frac{25y^8}{4x^4}}$

Rewrite each expression in rational form.

5. $\sqrt[3]{8}$ $= \boxed{8^{\frac{1}{3}}}$

6. $\sqrt[5]{-243}$ $= \boxed{(-243)^{\frac{1}{5}}}$

Rewrite each in radical form. Then evaluate.

7. $625^{\frac{3}{4}}$ $= \sqrt[4]{625^3}$ or $\left(\sqrt[4]{625}\right)^3$

8. $(-25)^{\frac{1}{2}}$ $= \sqrt[2]{-25^1}$ or $\left(\sqrt[2]{-25}\right)^1$

Determine whether the table represents an exponential growth, exponential decay or neither. Explain.

9.

		+1	+1	+1
x	0	1	2	3
y	3	6	12	24
		×2	×2	×2

growth

10.

		+1	+1	+1
x	1	2	3	4
y	162	108	72	48
		$\times\frac{2}{3}$	$\times\frac{2}{3}$	$\times\frac{2}{3}$

decay

11. The value of a TV is $1500. Its value decreases by 14% each year.
    a. Write a function that represents the value *y* (in dollars) of the TV after *t* years.

$$y = 1500(1-.14)^t$$

    b. Find the approximate monthly percent decrease in value.

$\frac{14}{12} = \frac{7}{6}\%$ each month

or about 1.2%

12. A penny doubles every day for 3 weeks. How much money do you have after 3 weeks?

3 weeks = 21 days $\quad y = 0.01(2)^{21}$

$= \$20,971.52$

13. Alicia starts an account with $2500 with interest of 3.5% annually. How much money does Alicia have after 10 years?

$$y = 2500(1+0.035)^{10}$$

$= \$3526.50$

Determine if each function is a percent decrease or percent increase. What is the value of the decrease or increase?

14. $y = 3(1.35)^t$

increase by 35%

19. $y = 2(0.63)^t$

decrease by 37%

Determine whether the given ordered pair is a solution to the function.

15. $y = 4(2)^x$, $(3, 32)$

$4(2)^3 = 32$ yes

16. $y = -(3)^x$, $(2, 9)$

$-(3)^2 = -9$ no

17. $y = 6\left(\frac{1}{3}\right)^x$, $(4,\ 0.5)$

$6\left(\frac{1}{3}\right)^4 = 0.07$ no

18. $y = -2\left(\frac{1}{2}\right)^x$, $(-3, -16)$

$-2\left(\frac{1}{2}\right)^{-3} = -16$ yes

19. Brittany invest money into stock. Erin invests money into a savings account. Brittany's investment is an exponential function and Erin's investment is a linear function. Let x represent number of years after the initial investment and y represent total amount of money (in thousands) after x years. Use the graph below to answer the questions.

a. How much money did both Erin and Brittany start with?

Erin $12,000
Brittany $4,000

b. How many years does it take for Erin to make $22,000?

5 yrs

c. After how many years will Brittany have more money than Erin?

4 yrs

d. How much money will Brittany have after 6 years?

$46,000