

Algebra I
6.1 - 6.5 Review

Name _____

Simplify the expression, write your answer with only positive exponents.

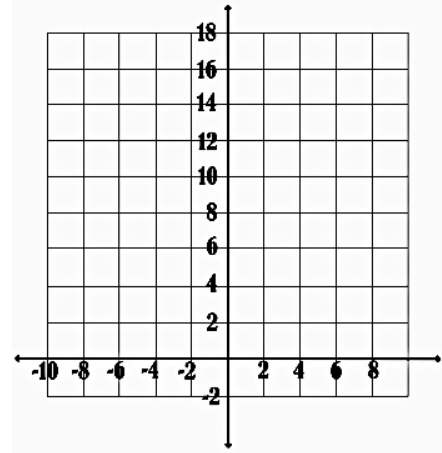
1. $(k^3)^{-2}$	2. $\left(\frac{4r^3}{2r^5}\right)$	3. $(-x^5y^3z^0)^2x^2$
4. $\left(\frac{5x^0}{10x^{-3}y^2}\right)^2$	5. $\left(\frac{1}{3y^3}\right)^{-3}$	6. $\left(\frac{-6a^{-9}b^5}{2a^2b^{-4}}\right)^4$

7. Write in rational exponent form. <i>Do not evaluate.</i> $\sqrt[3]{64}$	8. Write in radical form. <i>Do not evaluate.</i> $100^{3/2}$
9. Write in rational exponent form. Then evaluate. $(\sqrt{9})^3$	10. Write in radical form. Then evaluate. $\left(\frac{1}{81}\right)^{1/4}$

Evaluate each expression. Show your work!

11. $f(x) = 6\left(\frac{1}{2}\right)^x$ if $x = -2$	12. $f(x) = 2(6)^{x-2}$ if $x = 4$
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13. a. Graph the function $f(x) = \frac{1}{4}^x$ by creating a table of values.



b. State the Domain and Range.

Interval notation

Domain: _____

Range: _____

Set notation

Domain: _____

Range: _____

c. State the equation of the asymptote:

d. How would the graph of $f(x) = \frac{1}{4}^x - 4$ differ?

e. How would the graph of $f(x) = \frac{1}{4}^{x+3}$ differ?

14. Does this table represent a *linear function*, an *exponential function*, or *neither*?

x	y
1	-24
2	-12
3	-6
4	-3
5	-1.5

15. Does this table represent a *linear function*, an *exponential function*, or *neither*?

x	y
1	15
2	20
3	25
4	30
5	35

16. You have inherited land that was purchased for \$30,000 in 1960. The value of the land increased by approximately 5% per year.

a. Write an exponential function to model the situation.

b. What is the approximate value of the land in the year 2011?

17. You drink a beverage with 120 mg of caffeine. Each hour, the caffeine in your system decreases by about 12%.

a. Write an exponential function to model the situation.

b. What is the approximate amount of caffeine in your system after 4 hours?

For each exponential function, determine whether it represents *exponential growth* or *exponential decay*. Also, identify the initial amount and the percent rate of change.

18. $f(t) = 11(0.83)^t$

Circle one: growth decay

Initial amount: _____

Rate (as a percent): _____

19. $y(t) = -224(1.19)^t$

Circle one: growth decay

Initial amount: _____

Rate (as a percent): _____

20. You deposit \$1600 in a bank account. Find the balance after 3 years for each of the following situations. Use the formula $y = a(1 + \frac{r}{n})^{nt}$.

a. The account pays 2.5% annual interest compounded monthly.

b. The account pays 1.75% annual interest compounded quarterly.

c. The account pays 4% annual interest compounded yearly.

Solve each exponential equation.

21. $5^x = 5^{3x-2}$

22. $\left(\frac{1}{2}\right)^{2x+3} = 2^{3x-2}$

23. $16^{5x} = 4^{2x+16}$

24. $9^{3x+2} = 81^{x+4}$