

## Recall: Exponent Rules...

	Property Name	What this means:	Example
"Product Rule"	Product of Powers		
"Quotient Rule"	Quotient of Powers		
"Power Rule"	Power of a Power		
	Power of a Product		
	Power of Quotient		
"Negative Exponent Rule"	Negative Exponents		
"Zero Exponent Rule"	Zero Exponents		

Algebra I  
Section 9.1 – 9.3



Examples: Simplify. Use only positive exponents. What rule did you use?

1.  $4^5 \cdot 4^{-3}$

2.  $-3^2$

3.  $(-3)^2$

4.  $(-2x)^2$

5.  $-(1x)^6$

6.  $\left(\frac{3}{4x}\right)^2$

7.  $\frac{12d^5d^2f}{3f^{-1}}$

8.  $6g^5 \cdot 4g^1$

9.  $(5xy^{-4}z^0)^3$

10.  $\frac{5v^6}{15v^{-2}}$

11.  $(4x^3y^5x^2y^4)^2$

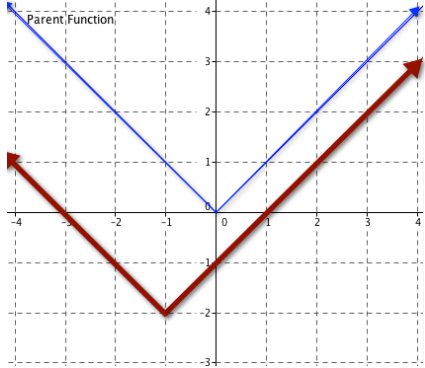
12.  $\left(\frac{28y^5}{8y^{-3}}\right)^3$

13.  $\frac{26x^{-1}y^{-3}}{4y^{-2}x}$

14.  $\left(\frac{3a^{-3}b^5}{4a^3b^4}\right)^2$

15.  $\left[\left(\sum_{t=3}^{23} \frac{y\pi x^{-3}ab^5}{t^3b^{4t}}\right)^2\right]^0$

Now summarize what you have learned!

Algebra Skillz		
GRAPH	SIMPLIFY	SOLVE
<p>Below, the graph of <math>f(x) =  x + 1  - 2</math> is sketched in bold. Its parent function <math>f(x) =  x </math> is represented by the thin curve.</p> <p>1. Describe the translation of the parent graph.</p> <p>2. How does the translation relate to the equation?</p> 	<p>3. <math>\sqrt{98} + \sqrt{18}</math></p> <p>4. <math>-2(8 + \sqrt{15})</math></p>	<p>5. Solve: <math>(x - 1)(2x + 7) = 0</math></p> <p>6. Factor and solve. <math>x^2 - 12x + 35 = 0</math></p>

## Practice

**Simplify completely. Use only positive exponents.**

1)  $(4^4)^2$

2)  $(2x^3)^2$

3)  $(2y^2)^3$

4)  $(uv^3)^4$

5)  $\frac{6^6}{6^3}$

6)  $\frac{6}{6^6}$

7)  $\frac{3x^3}{5x^2}$

8)  $\frac{4n}{2n^5}$

9)  $\frac{4y}{2x^4y^2}$

10)  $10^7 \cdot 10^5$

11)  $5^7 \cdot 5^6$

12)  $3n^9 \cdot 3n^8$

13)  $9xy^2 \cdot 9yx^4$

14)  $(-4)^4$

15)  $(3x^9)^3$

16)  $(3n^6)^4$

17)  $(2x^2y^4)^5$

18)  $\frac{4^8}{4^{10}}$

19)  $\frac{4^9}{4^2}$

20)  $3^0$

21)  $3^3$

22)  $\frac{4r^7}{4r^5}$

23)  $\frac{10m^8}{5m^9}$

24)  $\frac{2x^2y^4}{9x^6y^8}$

25)  $2v^{-4}$

26)  $b^{-1}$

**Simplify completely. Use only positive exponents. BRING THE PAIN!**

27)  $\frac{(2^4)^2}{2^3 \cdot 2^3}$

28)  $\left(\frac{2 \cdot 2^2}{2^2}\right)^2$

29)  $\left(\frac{2m^5n^3}{(n^8)^2 \cdot m^4n^7}\right)^0$

30)  $\frac{(2yx^7)^9}{2x^9y^9 \cdot 2y^8}$

31)  $\left(\frac{2m^9n^{10} \cdot 2m^8n^7}{(m^8n^3)^5}\right)^3$

32)  $\frac{(x^7y^8)^9 \cdot 2y^8}{x^2y^9}$

33)  $\frac{yx^2}{(2x^8y^{10})^7 \cdot 2x^8}$

34)  $\frac{2m^5n^8 \cdot 2n^9}{(nm^5)^{10}}$

Simplify. Use only positive exponents.

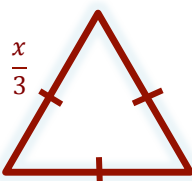
1.  $2x^5 \cdot 3x^1$

2.  $-7^2$

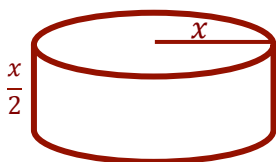
3.  $\frac{20x^2y^4}{12x^{-1}y^5}$

4. Write an expression for the figure's area or volume in terms of  $x$ .

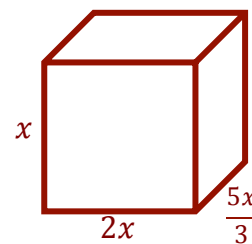
a.  $A = \frac{\sqrt{3}}{4}s^2$



b.  $V = \pi r^2 h$



c.  $V = lwh$



5. Solve each equation for  $x$  by finding a common base:

a.  $(3^2)^5 = 3^x$

b. Hint: rewrite 9 as  $3^2$   
 $9^{4x} = 3^{32}$

c. Hint: rewrite 2048 as  $2^7$   
 $2^{2x+1} = 2048$

d.  $5x^2 = 25^{(5x-12)}$

## SAT Review

### MUTIPLE CHOICE

If  $14^{-14} = (14)^{2k}$ , then the value of  $k =$

- (A) Cannot be determined
- (B) 14
- (C) -14
- (D) 7
- (E) -7

### DOUBLE MULTIPLE CHOICE ?!?!?!

If  $0 < a < 1$ , which of the following gives the correct ordering of  $\sqrt{a}$ ,  $a$ , and  $a^2$ ?

- (A)  $a < \sqrt{a} < a^2$
- (B)  $a < a^2 < \sqrt{a}$
- (C)  $\sqrt{a} < a < a^2$
- (D)  $\sqrt{a} < a^2 < a$
- (E)  $a^2 < a < \sqrt{a}$