Simplifying Monomials

Agenda

#tbt

HW Check

Activity

HW #1-10

Reminders

Quiz tmr!!

HW 4.3 due tmr!!!

Essential Question

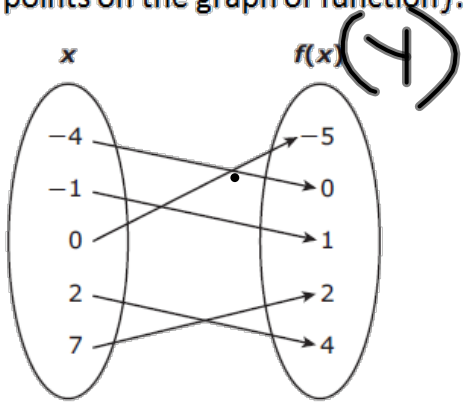
How do I use all the rules of exponents to simplify monomials?

Warm-Up Thursday #tbt

DR
x y

domain → input

1. The mapping below represents all the points on the graph of function *f*.



What is the domain of *f*?

A. {-4, -1, 0, 2, 7}
B. {-5, 0, 1, 2, 4}
C. {-5, -4, -1, 0, 1, 2, 4, 7}
D. {5}

2. The number of ferryboat trips, *f(c)*, needed to transport *c* cars in 1 day can be found using the function $f(c) = \frac{c}{20}$. If there are no more than 5,000 cars transported by ferryboat daily, what is the range of the function for this situation? $f(5000) = \frac{5000}{20} = 250$

A. The set of all integers greater than or equal to 5,000 ← domain
B. The set of all integers from 0 to 5,000
C. The set of all integers greater than or equal to 250
D. The set of all integers from 0 to 250

Questions, Comments, Concerns?

Algebra 1 – Unit 6: Rational Exponents and Radical Expressions

Practice Rational Exponents and Radical Expressions

1. What are two ways to write the square root of x?

2. Which expression is the equivalent to $(xyz)^{\frac{1}{2}}$?

A $\sqrt{xyz}$

B $x^2y^2z^2$

C $xyz^{\frac{1}{2}}$

D $\frac{1}{x^2y^2z^2}$

3. What is $\sqrt{36xy}$ written as a fractional exponent?

ex. $(x^2)^3 = x^6$

Simplify each expression.

4. $\left(5a^{\frac{-1}{2}}b^{\frac{-3}{2}}\right)^2 =$

5. $\sqrt{49x^5y^6z^{11}} = \left(49x^5y^6z^{11}\right)^{\frac{1}{2}}$

$49^{\frac{1}{2}}x^{\frac{5}{2}}y^3z^{\frac{11}{2}}$

$\boxed{7x^{\frac{5}{2}}y^3z^{\frac{11}{2}}}$

6. $(a^4bc)(a^9b^{-2}c^{21})^{\frac{1}{3}}$

$(a^4bc)(a^3b^1c^7)$

$\boxed{a^7b^2c^8}$

7. Which expression is greater $(-4)^{\frac{2}{3}}$ or $(-4)^3$? Explain your reasoning.

8. There is an error in the student work shown below. What is the error? Explain how to solve the problem.

$(12a^3b^4c^7)^{\frac{1}{2}} =$

$12^{\frac{1}{2}}a^{\frac{3}{2}}b^{\frac{4}{2}}c^{\frac{7}{2}} =$

$2ac^3\sqrt{3abc}$

Simplifying Monomials

Essential Question: How do I use all the rules of exponents to simplify monomials?

Directions: Use your exponent rules to simplify the expressions

We Do...		You Do...	
Expression	**Rules**	**Expression**	**Rules**
1. $\left(2x^2y^5\right)^3\left(3x^2\right)^{-2}$	① Neg. exp. rule $a^{-n}=\frac{1}{a^n}$	2. $\left(3a^4b^3\right)^2\left(3a^4\right)^{-3}$	
$\frac{(2x^2y^5)^3}{(3x^2)^2}$			
$\frac{(2x^2y^5)(2x^2y^5)(2x^2y^5)}{(3x^2)(3x^2)}$	② expand		
$\frac{8x^6y^{15}}{9x^4}$	③ product rule		
$\boxed{\frac{8x^2y^{15}}{9}}$	④ ÷	$\frac{b^6}{3a^4}$	

Simplifying Monomials

Essential Question: How do I use all the rules of exponents to simplify monomials?

Directions: Use your exponent rules to simplify the expressions

3. $(6a^2b)(-3ab^3)$ aab abbb $(6)(-3)a^{2+1}b^{1+3}$ $\boxed{-18a^3b^4}$	① product. mult. big #s Add exp	4. $(4x^2y)(-5xy^4)$ $-20x^3y^5$	
5. $\left(\frac{5x}{y^2}\right)^3$ $\frac{5^3x^3}{(y^2)^3}$ $\left(\frac{5x}{y^2}\right)\left(\frac{5x}{y^2}\right)\left(\frac{5x}{y^2}\right)$ $\boxed{\frac{125x^3}{y^6}}$	expand product	6. $\left(\frac{2a}{b^3}\right)^4$ $\frac{16a^4}{b^{12}}$	
7. $\left[\left(-7nm^2\right)^{-3}\right]^0 = 1$		8. $\left[\left(-11rs^8\right)^{-5}\right]^0$ 1	

Simplifying Monomials

Essential Question: How do I use all the rules of exponents to simplify monomials?

Directions: Use your exponent rules to simplify the expressions

9. $(4x^3y^{12})^{\frac{1}{2}}$ $4^{\frac{1}{2}}(x^3)^{\frac{1}{2}}(y^{12})^{\frac{1}{2}}$ $\boxed{2x^{\frac{3}{2}}y^6}$	① $(xy)^2 =$ x^2y^2 ② $(x^2)^3 =$ $x^{2\cdot 3}$	10. $(16a^5b^8)^{\frac{1}{4}}$ $2a^{\frac{5}{4}}b^2$	
11. $\left(\frac{5x}{y}\right)^2\left(\frac{y^3}{10x^2}\right)$		12. $\left(\frac{3a}{b}\right)^4\left(\frac{b^5}{6a^4}\right)$	

Simplifying Monomials

Essential Question: How do I use all the rules of exponents to simplify monomials?

Directions: Use your exponent rules to simplify the expressions

13. $\left(-27x^3y^6\right)^{\frac{2}{3}}$		14. $\left(-64a^6b^9\right)^{\frac{2}{3}}$	
15. $\left(\frac{2xy^2}{x^5y^3}\right)\left(\frac{5xy^3}{-30y^{-2}}\right)$		16. $\left(\frac{3ab^3}{a^4b^2}\right)\left(\frac{6ab^4}{-24b^{-5}}\right)$	

Quiz tmr! HW 4.3 due tmr!!!

Algebra 1 – Unit 6 Simplifying Polynomials

Practice Simplifying Polynomials **Name** _____

WHAT DO YOU CALL A FAKE NOODLE?

Write each expression in simplest form. Find the letter next to your answer in the column at the right. Write the letter of this answer in the box that matches that problem number. If the answer has a ●, shade in the box instead of writing a letter in it.

		Answers
1. $(-5x^2y^{-1})^4$	**2.** $\left(\frac{x^2y^{-2}}{x}\right)^5$	N $\frac{x^5}{y^{10}}$
3. $(x^2y^2z^{-1})^3(xyz^4)(x^3y)$	**4.** $\left(\frac{x^3y^{\frac{1}{2}}z}{x^{-5}yz^{23}}\right)^0$	A 8
5. $(4x^3y^2)(27x^3y^9)^{\frac{1}{3}}$	**6.** $(x^9)(x^3)$	M $12x^4y^5$
7. $\left(\frac{28x^7y^4}{7}\right)^{\frac{1}{2}}$ A	**8.** $(x^4)^{\frac{3}{2}}$	A $2x^3y^2\sqrt{x}$
9. $\left(\frac{x^2y^4}{z^{-3}}\right)^5$	**10.** $(4)^{\frac{3}{2}}$	S x^6
		● $x^{10}y^8z$
		V x^3y^9
		A $\frac{625x^8}{y^4}$
		I 1
		P x^{12}
		T $x^{10}y^{20}z^{15}$
		W $\frac{z^9}{9}$
		B 64

1	2	3	4	5	6	7	8	9	10
						A			

HW Help: Simplifying Monomials

No work = No credit = No kidding!

SOLUTION.... "An Impasta"

HELP... Remember, you can simplify however YOU feel comfortable. You do not have to follow my steps exactly!

1. Distribute the 4 to every piece in the parenthesis. MULTIPLY exponents (power to a power rule), then move negative exponents.

2. Simplify the inside first...an x will cancel and y needs to move (the negative exponent tells you). Then distribute the outside exponent.

3. Distribute the exponent to the first set of the parenthesis. Then use your product of powers rules (keep base, ADD exponents).

4. What is anything to the zero power??

5. Distribute, then combine. Remember to MULTIPLY coefficients (big #s)

6. How many x's would there be total?

7. Simplify what you can inside the parenthesis (28÷7=4), then distribute the exponent on the outside.

8. Remember: power to a power means to multiply the exponents. What is 4 * (3/2)?

9. Do what you can inside the parenthesis: move z to the top (it has a negative exponent, then distribute the exponent on the outside!

10. Rewrite as a radical using flower power!