

Name \_\_\_\_\_ HWK QUIZ 1/12/15

**All Guided Notes and ICP for the week of 1/12/15 to 1/16/15 due 1/16/15 in one stapled packet**

Assume a, b, c, x, y, and n are all NON zero				
Power of Powers	Product of Powers	Power of a Product	Quotient of Powers	Power of a Quotient
$(x^n)^a = x^{an}$	$x^a x^n = x^{a+n}$	$(x^n y^b)^a = x^{an} y^{ab}$	$\frac{x^a}{x^n} = x^{a-n}$	$\left(\frac{x^a}{y^n}\right)^b = \frac{x^{ab}}{y^{bn}}$
Zero as an Exponent	Negative Exponent 1	Negative Exponent 2		
$x^0 = 1$	$x^{-n} = \frac{1}{x^n}$	$x^b = \frac{1}{x^{-b}}$		

Simplify each of the expressions completely NO DECIMALS ALLOWED

1.  $(4x^5)^{-3} (2x^{-12})^{-3} = (4^1 x^5)^{-3} (2^1 x^{-12})^{-3}$   
 $= 4^{-3} x^{-15} 2^{-3} x^{36}$   
 $= 4^{-3} 2^{-3} x^{-15} x^{36}$   
 $(4^{-3} 2^{-3} x^{21})$  OR  $\frac{x^{21}}{4^3 2^3}$   
 OR  $\frac{x^{21}}{512}$

Simplify each of the expressions completely NO DECIMALS ALLOWED

2.  $\left(\frac{x^{-12} y^{14}}{(x^{-2} y^8)^4}\right)^2$

Name \_\_\_\_\_ HWK QUIZ 1/12/15

**All Guided Notes and ICP for the week of 1/12/15 to 1/16/15 due 1/16/15 in one stapled packet**

Assume a, b, c, x, y, and n are all NON zero				
Power of Powers	Product of Powers	Power of a Product	Quotient of Powers	Power of a Quotient
$(x^n)^a = x^{an}$	$x^a x^n = x^{a+n}$	$(x^n y^b)^a = x^{an} y^{ab}$	$\frac{x^a}{x^n} = x^{a-n}$	$\left(\frac{x^a}{y^n}\right)^b = \frac{x^{ab}}{y^{bn}}$
Zero as an Exponent	Negative Exponent 1	Negative Exponent 2		
$x^0 = 1$	$x^{-n} = \frac{1}{x^n}$	$x^b = \frac{1}{x^{-b}}$		

Simplify each of the expressions completely NO DECIMALS ALLOWED

1.  $(4x^5)^{-3} (2x^{-12})^{-3} = 4^{-3} 2^{-3} x^{21}$   
 $\frac{x^{21}}{4^3 2^3}$   $\frac{x^{21}}{512}$

Simplify each of the expressions completely NO DECIMALS ALLOWED

2.  $\left(\frac{x^{-12} y^{14}}{(x^{-2} y^8)^4}\right)^2 = \frac{x^{-12} y^{14}}{x^{-8} y^{32}} = \frac{x^{-24} y^{28}}{x^{-16} y^{64}} = x^{-8} y^{-36} = \frac{1}{x^8 y^{36}}$

Simplify and Rewrite each of the following expressions using ONLY positive exponents NO DECIMALS

3.  $(4x^{-8})^2 = 4^2 x^{-16} = 16 \cdot \frac{1}{x^{16}} = \frac{16}{x^{16}}$   
 or  $\frac{4^2}{x^{16}}$

Simplify and Rewrite each of the following expression WITHOUT A FRACTION and NO DECIMALS

4.  $\frac{x^{-19}y^8}{(x^{-3}y)^4} = \frac{x^{-19}y^8}{x^{-12}y^4} = x^{-19-(-12)}y^{8-4} = x^{-7}y^4 = \frac{1}{x^7}y^4$

Name \_\_\_\_\_ HWK QUIZ 1/12/15

All Guided Notes and ICP for the week of 1/12/15 to 1/16/15 due 1/16/15 in one stapled packet

Assume a, b, c, x, y, and n are all NON zero				
Power of Powers	Product of Powers	Power of a Product	Quotient of Powers	Power of a Quotient
$(x^a)^b = x^{ab}$	$x^a x^n = x^{a+n}$	$(x^a y^b)^c = x^{ac} y^{bc}$	$\frac{x^a}{x^n} = x^{a-n}$	$\left(\frac{x^a}{y^b}\right)^c = \frac{x^{ac}}{y^{bc}}$
Zero as an Exponent $x^0 = 1$	Negative Exponent 1 $x^{-n} = \frac{1}{x^n}$	Negative Exponent 2 $x^b = \frac{1}{x^{-b}}$		

Simplify each of the expressions completely NO DECIMALS ALLOWED

1.  $(3x^{15})^{-2}(6x^{-18})^{-3} = (3^{-2} \times^{-30})(6^{-3} x^{54}) = 3^{-2} 6^{-3} x^{-30+54} = 3^{-2} 6^{-3} x^{24}$   
 or  $\frac{x^{24}}{3^2 6^3} = \frac{x^{24}}{1944}$

Simplify each of the expressions completely NO DECIMALS ALLOWED

2.  $\left(\frac{x^{-32}y^{14}}{(x^{-2}y^{-8})^4}\right)^2$

Name \_\_\_\_\_ HWK QUIZ 1/12/15

All Guided Notes and ICP for the week of 1/12/15 to 1/16/15 due 1/16/15 in one stapled packet

Assume a, b, c, x, y, and n are all NON zero				
Power of Powers	Product of Powers	Power of a Product	Quotient of Powers	Power of a Quotient
$(x^n)^a = x^{an}$	$x^a x^n = x^{a+n}$	$(x^n y^b)^a = x^{an} y^{ab}$	$\frac{x^a}{x^n} = x^{a-n}$	$\left(\frac{x^a}{y^n}\right)^b = \frac{x^{ab}}{y^{bn}}$
Zero as an Exponent	Negative Exponent 1	Negative Exponent 2		
$x^0 = 1$	$x^{-n} = \frac{1}{x^n}$	$x^b = \frac{1}{x^{-b}}$		

Simplify each of the expressions completely NO DECIMALS ALLOWED

1.  $(3x^{15})^{-2}(6x^{-18})^{-3} = 3^{-2} 6^{-3} x^{24}$   
 $\frac{x^{24}}{3^2 6^3} = \frac{x^{24}}{1944}$

Simplify each of the expressions completely NO DECIMALS ALLOWED

2.  $\left(\frac{x^{-32}y^{14}}{(x^{-2}y^{-8})^4}\right)^2 = \frac{x^{-32} y^{14}}{x^{-8} y^{-32}} = \frac{x^{-64} y^{28}}{x^{-16} y^{-64}}$   
 $= x^{-48} y^{92} = \frac{y^{92}}{x^{48}}$

Simplify and Rewrite each of the following expressions using ONLY positive exponents NO DECIMALS

3.  $(6x^{-18})^2 = 6^2 x^{-36} = 36 \cdot \frac{1}{x^{36}}$   
 $= \frac{36}{x^{36}}$  OR  $\frac{6^2}{x^{36}}$

Simplify and Rewrite each of the following expression WITHOUT A FRACTION and NO DECIMALS

4.  $\frac{x^{-9}y^{18}}{(x^{-6}y)^4} = \frac{x^{-9} y^{18}}{x^{-24} y^4} = x^{-9-(-24)} y^{18-4} = x^{15} y^{14}$

Name \_\_\_\_\_ HWK QUIZ 1/12/15

All Guided Notes and ICP for the week of 1/12/15 to 1/16/15 due 1/16/15 in one stapled packet

Assume a, b, c, x, y, and n are all NON zero				
Power of Powers	Product of Powers	Power of a Product	Quotient of Powers	Power of a Quotient
$(x^n)^a = x^{an}$	$x^a x^n = x^{a+n}$	$(x^n y^b)^a = x^{an} y^{ab}$	$\frac{x^a}{x^n} = x^{a-n}$	$\left(\frac{x^a}{y^n}\right)^b = \frac{x^{ab}}{y^{bn}}$
Zero as an Exponent	Negative Exponent 1	Negative Exponent 2		
$x^0 = 1$	$x^{-n} = \frac{1}{x^n}$	$x^b = \frac{1}{x^{-b}}$		

Simplify each of the expressions completely NO DECIMALS ALLOWED

1.  $(4x^{25})^{-2} (8x^{-28})^{-3} = (4^{-2} x^{-50}) (8^{-3} x^{84})$   
 $4^{-2} 8^{-3} x^{-50} x^{84} = 4^{-2} 8^{-3} x^{-50+84}$   
 $= 4^{-2} 8^{-3} x^{34}$   
 OR  $\frac{x^{34}}{4^2 8^3}$   
 OR  $\frac{x^{34}}{8192}$

Simplify each of the expressions completely NO DECIMALS ALLOWED

2.  $\left(\frac{x^{-52} y^{34}}{(x^{-12} y^{-8})^4}\right)^2$

Name \_\_\_\_\_ HWK QUIZ 1/12/15

All Guided Notes and ICP for the week of 1/12/15 to 1/16/15 due 1/16/15 in one stapled packet

Assume a, b, c, x, y, and n are all NON zero				
Power of Powers	Product of Powers	Power of a Product	Quotient of Powers	Power of a Quotient
$(x^n)^a = x^{an}$	$x^a x^n = x^{a+n}$	$(x^n y^b)^a = x^{an} y^{ab}$	$\frac{x^a}{x^n} = x^{a-n}$	$\left(\frac{x^a}{y^n}\right)^b = \frac{x^{ab}}{y^{bn}}$
Zero as an Exponent	Negative Exponent 1	Negative Exponent 2		
$x^0 = 1$	$x^{-n} = \frac{1}{x^n}$	$x^b = \frac{1}{x^{-b}}$		

Simplify each of the expressions completely NO DECIMALS ALLOWED

1.  $(4x^{25})^{-2} (8x^{-28})^{-3} = 4^{-2} 8^{-3} x^{34}$   
 $\frac{x^{34}}{4^2 8^3} = \frac{x^{34}}{8192}$

Simplify each of the expressions completely NO DECIMALS ALLOWED

2.  $\left(\frac{x^{-52} y^{34}}{(x^{-12} y^{-8})^4}\right)^2 = \frac{x^{-52} y^{34}}{x^{-48} y^{-32}} = x^{-104} y^{68}$   
 $= x^{-104-96} y^{68-64} = x^{-200} y^{4}$   
 $\frac{y^4}{x^{200}}$

Simplify and Rewrite each of the following expressions using ONLY positive exponents NO DECIMALS

$$3. (5x^{-28})^2 = 5^2 x^{-56} = 25 \cdot \frac{1}{x^{56}}$$

$$= \left(\frac{25}{x^{56}}\right) \text{ or } \left(\frac{5^2}{x^{56}}\right)$$

Simplify and Rewrite each of the following expression WITHOUT A FRACTION and NO DECIMALS

$$4. \frac{x^{-91} y^{28}}{(x^{-8} y^4)^4} = \frac{x^{-91} y^{28}}{x^{-32} y^4} = x^{-91-(-32)} y^{28-4}$$

$$= x^{-91+32} y^{24} = x^{-59} y^{24}$$