

Erase to find answers

Stick Quiz

$$1. 3(7d^2)^4 = 7203d^8 \quad 2. (-7x^4)(-9x^8) = 63x^{12}$$

$$3 \cdot 7^4 d^8$$

$$\frac{4^3 x^3 y^6}{3^3}$$

$$3. \frac{8a^5 b^8}{40a^7 b^3} = \frac{b^5}{5a^2}$$

$$4. \left(\frac{4x^2 y^7}{3xy^5} \right)^3 = \frac{64x^3 y^6}{27}$$

? ? ? ?

Questions

? ? ? ?

On

? ? ? ?

Homework

? ? ? ?

T 7-3 All Exponent Properties

Introducing Negative and Zero Exponents

I can... use all properties of exponents.

Negative Exponents *(are not related to negative integers)*

Must get rid of negative exponents by moving up and down the elevator.
(the fraction)

For Example:

$$\frac{x^{-2}}{x^5} = \frac{1}{x^5 x^2} = \frac{1}{x^7}$$

Division Rule

$$\frac{x^m}{x^n} = x^{m-n}$$

$$\frac{x^5}{x^{10}} = x^{5-10}$$

$$= x^{-5}$$

$$\frac{x^{12}}{x^3} = x^{12-3} = x^9$$

$$= \frac{1}{x^5}$$

$$\frac{\cancel{x^5}}{x^{10-5}} = \frac{1}{x^5}$$

$$\frac{1}{x^{-7}} = x^7$$

$$\frac{a^{-2}}{1} = \frac{1}{a^2}$$

$$\frac{1}{b^{-3}} = \frac{1b^3}{1} = b^3$$

$$\frac{c^{-4}}{d^{-6}} = \frac{d^6}{c^4}$$

$$\frac{2x^{-3}}{x^2} = \frac{2}{x^2x^3} = \frac{2}{x^5}$$

$$(3^{-1})^{-2} = 3^{(-1)(-2)} = 3^2 = 9$$

FLIP fraction
make exp +

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

$$\frac{y}{4^{-2}x} = \frac{4^2 y}{x} = \frac{16y}{x}$$

$$\frac{-3}{x^{-4}} = -3x^4$$

$$\frac{(-9)^{-2}}{(-9)^2} = \frac{1}{(-9)^2} = \frac{1}{81}$$

Whiteboards
Simplify the expression without using a calculator.

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$$\frac{x^{-4}y^9}{z^{-6}}$$

$$\frac{z^6y^9}{x^4}$$

$$\frac{a^{-2}b^3}{c^{-5}}$$

$$\frac{c^5b^3}{a^2}$$

$$\frac{5 \cancel{75} p^3 q^{-5}}{\cancel{15} p^5 q^4 r^{-8}} = \frac{5 p^3 q^4 r^8}{p^5 q^4 r^{-8}} = \frac{5 r^8}{p^2 q}$$

**ZERO
PROPERTY**

$$\frac{a^4}{a^2}$$

$$\frac{\cancel{k^{21}}}{\cancel{k^{21}}} = 1$$

$$\frac{b^5}{b^8}$$

$$\frac{x}{x} = 1$$

$$1 = \frac{m^7}{m^7} = m^{7-7} = m^0$$

$$\frac{x^4 y^3}{x^2 y^7}$$

$$(2xy)^0 = 1$$

$$(2^0 xy) = 1xy = xy$$

$$5x^0 = 5 \cdot 1 = 5$$

$$(5x)^0 = 1$$

Whiteboards

Simplify the expression without using a calculator.

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$$4^2 \cdot 4^{-3} = \frac{4^2}{4^{3-2}} = \frac{1}{4}$$

$$4^2 \cdot 4^{-3} = 4^{-1} = \frac{1}{4}$$

$$(3^{-1})^{-2}$$

$$(3 \cdot 4)^{-2}$$

Whiteboards

Simplify the expression without using a calculator.

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$$(2x^4)^0 =$$

1

$$(2^{-3})^{-2}$$

2⁶

$$\frac{x^{-3}y^5}{x^{-6}y^{-4}} =$$

x³y⁹

Whiteboards

Simplify the expression without using a calculator.

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$$\frac{1}{5p^8q^{-3}}$$

$$\frac{q^3}{5p^8}$$

$$\left(\frac{-4x^2}{2x^{-1}}\right)^{-1}$$

$$\frac{1}{2x^3}$$

$$(ab^2)^0$$

$$1$$

Whiteboards

Simplify the expression without using a calculator.

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$$\frac{8}{k^{-3}} =$$

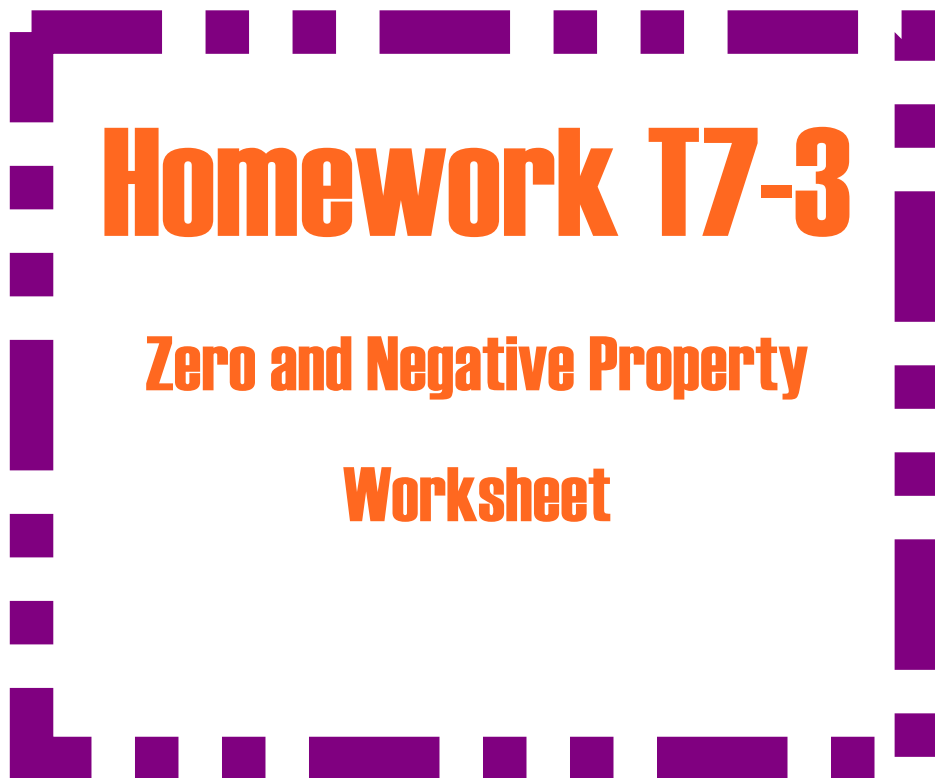
$$8k^3$$

$$(-3^{-4})^{-1} =$$

$$81$$

$$\frac{12a^{-4}b^2}{36a^{-4}b^{-3}} =$$

$$\frac{b^5}{3}$$



Homework T7-3

Zero and Negative Property

Worksheet

NEGATIVE Bases

$-x^2$ Negative in front of the base

$$-x^2 = -1 \cdot x^2 = -1 \cdot x \cdot x$$

$(-x)^2$ Negative part of the base.

$$(-x)^2 = (-1 \cdot x)^2 = (-1 \cdot x)(-1 \cdot x)$$