Algebra 1 Bellwork

Monday, April 11, 2016

Simplify each. Write the answer without zero or negative exponents. Give fractional answers in reduced form, no decimals.

1.
$$\frac{-5^2a^{-4}b^9}{2^{-3}c^2d^{-7}}$$

$$2. \quad \frac{8x^{-8}y^5z^7}{32x^{-6}y^9z^{-3}}$$

3.
$$(-10P^{-4}Q^3R)^2(2P^{-6}Q^{-4}R^2)^{-3}$$

$$4. \left(\frac{6g^{-5}h^2}{4g^6h^{-1}}\right)^{-4}$$

5. Evaluate each expression for X = -6 Y = 4 Z = 12 Give fractional answers in reduced form. No decimals.

a.
$$-2X^2Y^{-3}$$

b.
$$\frac{X^{-1}Z^2}{Y^{-2}}$$

- 6. Write the growth/decay factor that this % change represents: 13.9% increase b=
- 7. Give the % change this exponential equation represents and state if it is an increase or decrease. $y = 2025(0.0901)^x$ %change = inc or dec?
- 8. The half-life of a certain radioactive material is 40 minutes. You have 625 grams of this material at 9:00 am.
- a) Model this situation with an exponential equation.
- b) Find the amount of material remaining at 5:30pm the same day. Round to the nearest hundredth.
- 9. The population in a city has been decreasing 2.71% each year. The population in 2005 was 145,080.
- a) Model this situation with an exponential equation.
- b) Find the population in 1999.

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Simplify each. Write the answer without zero or negative exponents. Give fractional answers in reduced form, no decimals.

1.
$$\frac{-5^{2}a^{-4}b^{9}}{2^{-3}c^{2}d^{-7}} = \frac{-25 b^{9} 8 d^{7}}{a^{4} c^{2}}$$
$$= \frac{-200b^{9} d^{7}}{a^{4} c^{2}}$$

2.
$$\frac{8x^{-8}y^5z^7}{32x^{-6}y^9z^{-3}} = \boxed{\frac{2}{\forall \times^2 \vee^4}}$$

3.
$$(-10P^{-4}Q^{3}R)^{2}(2P^{-6}Q^{-4}R^{2})^{-3}$$

$$(100 p^{-8}Q^{6}R^{2})(2^{-3}p^{18}Q^{12}R^{-1})$$

$$\frac{100 p^{10}Q^{18}}{8 R^{4}} = \frac{25p^{10}Q^{18}}{2R^{4}}$$

4.
$$\left(\frac{6g^{-5}h^2}{4g^6h^{-1}}\right)^{-4} = \left(\frac{3 h^3}{2g''}\right)^{-4}$$

$$= \left(\frac{3 h^3}{2g''}\right)^{-4}$$

$$= \left(\frac{2g''}{3h^3}\right)^{-4}$$

Y = 45. Evaluate each expression for X = -6Give fractional answers in reduced form. No decimals.

a.
$$-2X^{2}Y^{-3}$$

$$= \frac{-2 \times^{2}}{y^{3}} = \frac{-2(-6)^{2}}{4^{3}} = \frac{-2(36)}{6^{9}}$$

$$= \frac{-72}{69} = \frac{-9}{8}$$

ecimals.
b.
$$\frac{X^{-1}Z^2}{Y^{-2}} = \frac{Y^2 + Z^2}{X}$$

$$= \frac{(4)^2(12)^2}{-6} = \frac{16 \cdot 144}{-6} = \frac{-384}{-384}$$

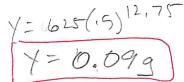
6. Write the growth/decay factor that this % change represents: 13.9% increase

7. Give the % change this exponential equation represents and state if it is an increase or decrease.

%change = 90,99 % inc or dec? DEC $y = 2025(0.0901)^x$ 9.01-100 = -90.99

- 8. The half-life of a certain radioactive material is 40 minutes. You have 625 grams of this material at 9:00 am.
- a) Model this situation with an exponential equation.
- Y= 625(.5)X
- b) Find the amount of material remaining at 5:30pm the same day. Round to the nearest hundredth.

9:00am to 5:30pm = 8.5hrs $X = 8.5 \text{ hrs} \times 60 = 510 \text{ min} \div = 12.75$ Y = 0.099



- 9. The population in a city has been decreasing 2.71% each year. The population in 2005 was 145,080. y=145,080(.9729). 100-2.71=97.291/,
- a) Model this situation with an exponential equation.

b) Find the population in 1999.

X = 1999 - 2005 = -6