

7-4 Division Properties of Exponents

Simplify each expression completely. Leave your answer in fraction form, if necessary. (1 pt each)

1. $\frac{a^2}{a^4} = a^{-2} = \boxed{\frac{1}{a^2}}$

2. $\frac{2x^2y^4}{3x^3y^2} = \boxed{\frac{2y^2}{3x}}$

3. $\left(\frac{c}{2c^0}\right)^2 = \left(\frac{c}{2}\right)^2 = \boxed{\frac{c^2}{4}}$

4. $\left(\frac{3b^{-2}}{b^2}\right)^4$
 $= (3b^{-4})^4 = \left(\frac{3}{b^4}\right)^4$
 $= \boxed{\frac{81}{b^{16}}}$

5. $\frac{(x^2y^2)(-2y^7)}{(xy^4)(14y^2)} = \frac{-2x^2y^9}{14xy^6} = \boxed{\frac{-1xy^3}{7}}$

6. Simplify the expression. Write your answer in scientific notation.

$$\frac{3.066 \times 10^8}{7.3 \times 10^3} = \frac{3.066}{7.3} \times \frac{10^8}{10^3}$$

$$= 4.2 \times 10^5$$

$$= \boxed{4.2 \times 10^4}$$

(2)

7. The population of Earth is about 6.6468×10^9 . Land surface of Earth is about 0.573×10^8 square miles. What is the population density for the surface area of the Earth, in people per square mile? Write your answer using scientific notation.

$$\frac{6.6468 \times 10^9}{0.573 \times 10^8} = \frac{6.6468}{0.573} \times \frac{10^9}{10^8}$$

$$= 11.6 \times 10^1$$

$$= \boxed{1.16 \times 10^2}$$

(2)

The population density of the Earth is about 1.16×10^2 people per square mile.