

Homework 6

Polynomials, Rational Expressions, and Scientific Notation

Name: _____

Show all work clearly. Simplify all answers completely and use proper exponent rules.

Part I: Simplify

1.

$$(10xy^2)(3x^2y)$$

2.

$$\frac{18x^3y^2}{36xy^5}$$

3.

$$\frac{24m^2n^6}{6m^3n^2}$$

4.

$$\frac{12x^5}{4x^2}$$

5.

$$(3a^2b)(-2ab^3)$$

6.

$$\frac{15p^4q^2}{5p^2q}$$

Part II: Scientific Notation

7. Write each number in scientific notation.

(a)

62,000

(b)

0.000071

(c)

5,420,000

8. Write each number in standard form.

(a)

4.2×10^5

(b)

7.8×10^{-4}

(c)

9.15×10^3

9. Simplify and write your answer in both scientific notation and standard form.

(a)

$$(3 \times 10^4)(2 \times 10^3)$$

(b)

$$\frac{8 \times 10^7}{2 \times 10^2}$$

(c)

$$(5 \times 10^{-3})(4 \times 10^5)$$

Part III: Simplifying Polynomial Expressions

10. Simplify each expression.

(a)

$$j - 4k + 7 + 2j - 3k$$

(b)

$$(2x^2 + 3x - 1) + (7x^2 - x + 4)$$

(c)

$$(3x^2 - 7x + 2) - (x^2 + 2x - 5)$$

(d)

$$(10n^3 + 3n^2 - n) - (2n^3 - 4n^2 + 5)$$

(e)

$$(-2m^2 - 6m + 3) + (-3m^2 + m - 1)$$

(f)

$$(9a^2 - 2a + 2) + (5a^2 - 5a + 7)$$

(g)

$$(4y^2 - 3y + 8) - (2y^2 + y - 5)$$

(h)

$$(-5p^2 + 2p - 7) + (3p^2 - 9p + 4)$$

Part IV: Applications

11. A bacteria population grows from 3×10^4 bacteria to 9×10^6 bacteria. How many times larger is the final population than the initial population? Write your answer in scientific notation.

12. The area of a rectangle is represented by

$$(2x + 3)(x + 5).$$

Expand and simplify the polynomial expression.