

All exam answers are to be in simplest form. A scientific calculator may be used. No notes, no books, no homework may be used while taking this exam. Use blank spaces on the exam to show your work. Attach all scratch paper to the exam.

Evaluate each expression.

1)  $5^{-3}$

2)  $(-6)^3$

3)  $-6^3$

4)  $6^3$

Simplify the expression. Write the result using positive exponents only.

5)  $2^{-1} + 4^{-1}$

6)  $(-4x^3y^{-4})(2x^{-1}y)$

7)  $\frac{x^{16}}{x^{15}}$

8)  $\frac{p^6}{p^{-4}}$

9)  $\left(\frac{xy^3}{x^4y}\right)^{-2}$

10)  $\frac{4^{-6}x^{-5}y^2}{4^{-3}x^{-8}y^4}$

Express the number in scientific notation.

11) 690,000

12) 0.000049414

Write the number in standard form.

13)  $3.47 \times 10^{-5}$

14)  $6.57 \times 10^3$

Simplify. Write the answer in standard form.

15)  $(4 \times 10^{-3})(7 \times 10^{-2})$

Complete the table for the polynomial and answer the question.

16) a) Polynomial:  $4xy^8 - 8x^3y^2z + 8x^8y - 1$

Term	Numerical Coefficient	Degree of Term
$4xy^8$		
$-8x^3y^2z$		
$8x^8y$		
$-1$		

b) What is the degree of the polynomial? \_\_\_\_\_

Simplify by combining like terms.

17)  $7x^9 + 5x^3 - 15x^9 + 11x^9 + 4x^3$

Perform the indicated operations.

$$18) (2x^8 + 9x^7 + 7x^6 + 7) + (8x^8 + 6x^7 + 8x^6 - 6)$$

19)

$$\begin{array}{r} 2x^9 + 5x^8 + 7x^7 - 4 \\ - (4x^9 + 3x^8 - 5x^7 + 9) \\ \hline \end{array}$$

20) Subtract  $(3x - 30)$  from the sum of  $(-2x + 2)$  and  $(9x - 8)$ .

Multiply.

$$21) -7x^7(-12x^6 - 3x^2 + 7)$$

$$22) \left(2x + \frac{2}{5}\right) \left(2x - \frac{2}{5}\right)$$

$$23) (x + 4)(-3x + 5)$$

$$24) (3x + 11)^2$$

$$25) (8x - 9)^2$$

$$26) (x^2 + 13b)(x^2 - 13b)$$

$$27) (8x - 1)(x^2 - 5x + 1)$$

Divide.

$$28) \frac{5x^2 + 2xy - 3x}{10xy}$$

$$29) (x^2 + 12x + 27) \div (x + 3)$$

$$30) \frac{8x^3 - 64}{2x + 4}$$