

Math 990 Exponents and Polynomials Practice Problem Set

Name _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Use the product rule, if possible, to simplify the expression. Write the answer in exponential form.

1) $x^6 \cdot x^5 \cdot x^6$

2) $(-4p^3)(-7p^2)$

3) $(-9)(-9)^2(-9)(-9)(-9)^3$

Use the power rules for exponents to simplify. Write the answer in exponential form.

4) $(y^7)^{10}$

5) $5(rt)^7$

6) $(8rt)^4$

7) $\left(\frac{p}{q}\right)^6$ ($q \neq 0$)

Simplify the expression.

8) $\left(\frac{pm^5}{q^5}\right)^3$ ($q \neq 0$)

9) $(2p^4s^2)^4(s^2)$

10) $\left(\frac{2p^3v^4}{s^3}\right)^3$ ($s \neq 0$)

Evaluate the expression.

11) $8^{-1} + 4^{-1}$

Simplify by writing the expression with positive exponents. Assume that all variables represent nonzero real numbers.

12) $\frac{x}{x^{12}}$

13) $\frac{t^{-4}}{t^{-8}}$

$$14) \frac{(x^{-3}y^8z)^{-4}}{(x^{-5}y^9z)^{-3}}$$

Add.

$$15) (8 + 6n^6 + 7n^5) + (9n^6 - 2n^5 + 7)$$

Subtract.

$$16) (18a^4 - 16a^2) - (-13a^4 - 11a^2)$$

Perform the indicated operation.

$$17) (2n^5 + 5n^4 - 17) - (-19n^4 + 5n^5 + 17) + (n^6 + 6)$$

Add or subtract as indicated.

$$18) (x^3y^2 - 5x^2y^3 - 3xy - 1) + (x^2y^3 - 7x^3y^2 + 5xy - 5)$$

Find the product.

$$19) -3x^6(-5x^5 + 12)$$

$$20) (9y - 4)(81y^2 + 36y + 16)$$

$$21) (6x^4 - 8x^2 + 6x) \left(\frac{1}{2}x + 5 \right)$$

$$22) (2x^2 + 2x + 1)(x^2 + 5x - 4)$$

$$23) 2y^3(2y + 1)(y + 3)$$

$$24) (9m + 8)^2$$

$$25) (x + 5)^4$$

Answer Key

Testname: POLYNOMIALPRACTICE

1) x^{17}

2) $28p^5$

3) $(-9)^8$

4) y^{70}

5) $5r^7t^7$

6) $8^4r^4t^4$

7) $\frac{p^6}{q^6}$

8) $\frac{p^3m^{15}}{q^{15}}$

9) $16p^{16}s^{10}$

10) $\frac{8p^9y^{12}}{s^9}$

11) $\frac{3}{8}$

12) $\frac{1}{x^{11}}$

13) t^4

14) $\frac{1}{x^3y^5z}$

15) $15n^6 + 5n^5 + 15$

16) $31a^4 - 5a^2$

17) $n^6 - 3n^5 + 24n^4 - 28$

18) $-6x^3y^2 - 4x^2y^3 + 2xy - 6$

19) $15x^{11} - 36x^6$

20) $729y^3 - 64$

21) $3x^5 + 30x^4 - 4x^3 - 37x^2 + 30x$

22) $2x^4 + 12x^3 + 3x^2 - 3x - 4$

23) $4y^5 + 14y^4 + 6y^3$

24) $81m^2 + 144m + 64$

25) $x^4 + 20x^3 + 150x^2 + 500x + 625$