



Summer Assignment for Precalculus (M105)

Name _____

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

Find the product.

1) $(5x + 4)^3$ 1) _____

Simplify the exponential expression.

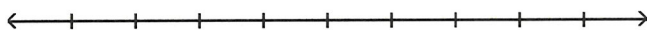
2) $\left(\frac{6x^{-5}y^{-2}z^4}{2xy^{-2}z^{-4}} \right)^{-2}$ 2) _____

Write the number in decimal notation without the use of exponents.

3) -8.5961×10^6 3) _____

Solve the linear inequality. Other than $\emptyset$, use interval notation to express the solution set and graph the solution set on a number line.

4) $-4(2x + 1) \geq 2[4x - 3(x - 3)]$ 4) _____



Solve the problem.

- 5) A train ticket in a certain city is \$2.50. People who use the train also have the option of purchasing a frequent rider pass for \$18.75 each month. With the pass, each ticket costs only \$1.75. Determine the number of times in a month the train must be used so that the total monthly cost without the pass is the same as the total monthly cost with the pass. 5) _____

Rewrite the expression without absolute value bars.

6) $|\sqrt{5} - 19|$ 6) _____

Simplify the exponential expression.

7) $\left(\frac{2x^3}{y^2} \right)^{-5}$ 7) _____

Perform the indicated operations.

8) $(10x^4y^2 + 6x^3y + 7y) - (4x^4y^2 + 12x^3y + 11y + 2x)$ 8) _____

Rewrite the expression without absolute value bars.

9) $||-2| + |-5||$ 9) _____

Perform the indicated computation. Write the answer in scientific notation.

10) $(3 \times 10^9)(1.8 \times 10^{-7})$ 10) _____

State the name of the property illustrated.

11) $14 \cdot (6 + 2) = 14 \cdot 6 + 14 \cdot 2$ 11) _____

Multiply or divide as indicated.

12) $\frac{3x^2 + 14x - 49}{8x - 32} \cdot \frac{x^2 - 4x}{9x^2 - 49} \div \frac{7x + 49}{3x^3}$ 12) _____

Factor and simplify the algebraic expression.

13) $(x + 9)^{-1/5} + (x + 9)^{-6/5}$ 13) _____

Solve.

14) The formula $C = \frac{5}{9}(F - 32)$ expresses the relationship between Fahrenheit 14) _____

temperature, F, and Celsius temperature, C. Use the formula to convert 104°F to its equivalent temperature on the Celsius scale.

Simplify the exponential expression.

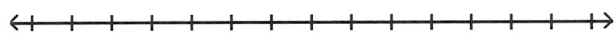
15) $(x^{-6})^{-3}$ 15) _____

Factor the trinomial, or state that the trinomial is prime.

16) $9x^2 + 6xy - 8y^2$ 16) _____

Solve the compound inequality. Other than $\emptyset$, use interval notation to express the solution set and graph the solution set on a number line.

17) $-31 \leq -5x + 4 < -11$ 17) _____



Use the product rule to simplify the expression.

18) $\sqrt{14x^2} \cdot \sqrt{28x}$ 18) _____

Perform the indicated computation. Write the answer in scientific notation.

19) $\frac{0.00016 \times 0.0003}{0.0008}$ 19) _____

Add or subtract terms whenever possible.

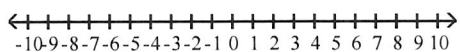
20) $y\sqrt[3]{54x} - \sqrt[3]{250xy^3}$ 20) _____

21) $\sqrt{2x} - 7\sqrt{32x} - 7\sqrt{50x}$ 21) _____

Solve the absolute value inequality. Other than $\emptyset$, use interval notation to express the solution set and graph the solution set on a number line.

22) $\left| \frac{3y + 12}{4} \right| < 3$

22) _____



Simplify the exponential expression.

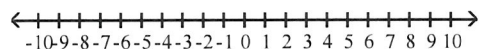
23) $(x^{-5}y^4)^{-2}$

23) _____

Solve the absolute value inequality. Other than $\emptyset$, use interval notation to express the solution set and graph the solution set on a number line.

24) $8 + \left| 1 - \frac{x}{2} \right| \geq 10$

24) _____



Is the algebraic expression a polynomial? If it is, write the polynomial in standard form.

25) $\frac{3x - 5}{x}$

25) _____

Factor by grouping. Assume any variable exponents represent whole numbers.

26) $3x^3 + 6x^2 + 7x + 14$

26) _____

Add or subtract as indicated.

27) $\frac{x^2 - 12}{x^2 + 3x - 18} + \frac{3x - 6}{x^2 + 3x - 18}$

27) _____

Write the algebraic expression without parentheses.

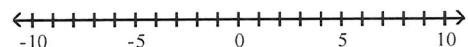
28) $\frac{1}{4}(4x) + [(9x) + (-9x)]$

28) _____

Solve the compound inequality. Other than $\emptyset$, use interval notation to express the solution set and graph the solution set on a number line.

29) $-4 \leq -4x - 12 < 4$

29) _____



Evaluate the algebraic expression for the given value or values of the variable(s).

30) $x^2 - 3(x - y); \quad x = 8 \text{ and } y = 2$

30) _____

Rationalize the denominator.

31) $\frac{2}{\sqrt{5} + \sqrt{7}}$

31) _____

Factor completely, or state that the polynomial is prime.

32) $81b^2x - 16y - 16x + 81b^2y$

32) _____

Simplify the exponential expression.

33) $(-9x^6y)(-2x^4y^3)$

33) _____

Use the product rule to simplify the expression.

34) $\sqrt{98x^2}$

34) _____

Factor using the formula for the sum or difference of two cubes.

35) $125x^3 - 27$

35) _____