

Algebra One Worksheets

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Part 1: Building a Foundation

What is the degree of the polynomial $(3x^4 - 2x^3 + x - 5)$?

Hint: Consider the highest exponent of the variable.

- A) 1
- B) 2
- C) 3
- D) 4

Which of the following are like terms? Select all that apply.

Hint: Like terms have the same variable raised to the same power.

- A) $(5x^2)$
- B) $(3x)$
- C) $(7x^2)$
- D) $(2x)$

Explain the difference between a linear equation and a quadratic equation.

Hint: Consider the highest power of the variable in each type of equation.

List the steps to solve a linear equation in one variable.

Hint: Think about isolating the variable.

1. Step 1

2. Step 2

3. Step 3

Which property is used in the expression $(a(b + c) = ab + ac)$?

Hint: Think about how terms are distributed in multiplication.

- A) Commutative Property
- B) Associative Property
- C) Distributive Property
- D) Identity Property

Part 2: Understanding and Application

If $f(x) = 2x + 3$, what is $f(4)$?

Hint: Substitute 4 into the function for x .

- A) 5
- B) 8
- C) 11
- D) 15

Which of the following statements about the function $f(x) = x^2 - 4$ are true? Select all that apply.

Hint: Consider the properties of quadratic functions.

- A) The graph is a parabola.
- B) The vertex is at the origin.
- C) The function has no real roots.
- D) The function is symmetric about the y-axis.

Describe how you would graph the inequality $y > 2x + 1$ on a coordinate plane.

Hint: Think about the line and the area it divides.

Solve for x in the equation $3x - 7 = 2x + 5$.

Hint: Isolate x on one side of the equation.

- A) 12
- B) -12
- C) 7
- D) -7

Which of the following are solutions to the inequality $x^2 - 9 < 0$? Select all that apply.

Hint: Consider the values that make the expression negative.

- A) $x = -4$
- B) $x = -2$
- C) $x = 0$
- D) $x = 3$

A rectangle has a length that is 3 times its width. If the perimeter is 48 units, find the dimensions of the rectangle.

Hint: Use the perimeter formula to set up an equation.

Part 3: Analysis, Evaluation, and Creation

What is the axis of symmetry for the quadratic function $(y = x^2 - 6x + 8)$?

Hint: Use the formula $(x = -\frac{b}{2a})$.

- A) $(x = -3)$
- B) $(x = 3)$
- C) $(x = 6)$
- D) $(x = -6)$

Analyze the polynomial $(x^3 - 4x^2 + 4x)$. Which of the following are true? Select all that apply.

Hint: Consider the factors and roots of the polynomial.

- A) It can be factored as $(x(x - 2)^2)$.
- B) It has a double root at $(x = 2)$.
- C) It has a root at $(x = 0)$.
- D) It is a quadratic polynomial.

Explain how the graph of $(y = (x - 2)^2)$ differs from the graph of $(y = x^2)$.

Hint: Consider the transformations applied to the basic quadratic function.

Evaluate the expression $(\frac{2x^2 - 8}{x - 2})$ for $(x = 4)$.

Hint: Substitute 4 into the expression and simplify.

- A) 0
- B) 4
- C) 8
- D) 16

Which of the following transformations will change the graph of $(y = x^2)$ to $(y = (x - 3)^2 + 2)$?
Select all that apply.

Hint: Consider horizontal and vertical shifts.

- A) Shift right by 3 units
- B) Shift left by 3 units
- C) Shift up by 2 units
- D) Shift down by 2 units

Create a real-world problem that can be solved using a system of linear equations. Provide the solution to your problem.

Hint: Think about two quantities that depend on each other.

Design a quadratic equation that has roots at $(x = 1)$ and $(x = -3)$. Write the equation in standard form.

Hint: Use the factored form to create the equation.

1. Factored form

2. Standard form