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Adding Subtracting Polynomials Worksheet Questions and Answers PDF

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Part 1: Building a Foundation

What is the degree of the polynomial $4x^3 + 3x^2 - 2x + 7$?

Hint: Consider the highest power of the variable in the polynomial.

○ A) 1
○ B) 2
○ **C) 3** ✓
○ D) 4

> The degree of the polynomial is the highest exponent of the variable, which is 3.

Which of the following are terms of the polynomial $5x^2 - 3x + 4$?

Hint: Identify the individual components of the polynomial.

☐ **A) $5x^2$** ✓
☐ **B) $-3x$** ✓
☐ **C) 4** ✓
☐ D) x^3

> The terms of the polynomial are $5x^2$, $-3x$, and 4.

Define a polynomial and give an example.

Hint: A polynomial is a mathematical expression involving a sum of powers in one or more variables multiplied by coefficients.

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> **A polynomial is an expression like $ax^n + bx^{n-1} + ... + k$ where a, b, k are constants and n is a non-negative integer. An example is $2x^2 + 3x + 1$.**

Identify the coefficient and the degree of the term $7x^4$.

Hint: The coefficient is the number in front of the variable, and the degree is the exponent of the variable.

1. What is the coefficient?

> 7

---

2. What is the degree?

> 4

> The coefficient is 7 and the degree is 4.

Part 2: comprehension and Application

Which statement best describes the process of adding polynomials?

Hint: Think about how you combine similar terms.

○ A) Add the coefficients of all terms regardless of their variables.
○ B) Add only the constant terms.
○ **C) Add the coefficients of like terms. ✔**
○ D) Add the highest degree terms only.

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> The correct process is to add the coefficients of like terms.

When subtractING the polynomial $(2x^2 - 3x + 5)$ from $(4x^2 + x - 2)$, which steps are necessary?

Hint: Consider the steps involved in polynomial subtraction.

☐ **A) Change the signs of the terms in the second polynomial.** ✓
☐ **B) Align like terms.** ✓
☐ **C) Subtract the coefficients of like terms.** ✓
☐ D) Multiply the polynomials.

> The necessary steps include changing the signs of the second polynomial and aligning like terms.

A rectangle has a length represented by the polynomial $(3x + 2)$ and a width represented by $(x - 1)$. Write an expression for the perimeter of the rectangle.

Hint: The perimeter of a rectangle is given by the formula $(P = 2(l + w))$.

> **The expression for the perimeter is $(2((3x + 2) + (x - 1)) = 2(4x + 1) = 8x + 2)$.**

What is the result of adding the polynomials $(3x^2 + 2x - 1)$ and $(x^2 - 4x + 3)$?

Hint: Combine like terms carefully.

○ **A) $(4x^2 - 2x + 2)$** ✓
○ B) $(4x^2 - 6x + 2)$
○ C) $(2x^2 - 2x + 2)$
○ D) $(4x^2 + 6x - 4)$

> The result of adding the polynomials is $(4x^2 - 2x + 2)$.

Part 3: Analysis, Evaluation, and Creation

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Which of the following best describes the relationship between the terms of the polynomial $2x^3 - 4x^2 + x - 5$?

Hint: Consider the degrees of each term.

◯ A) All terms have the same degree.
◯ **B) The terms have different degrees. ✓**
◯ C) All terms are constants.
◯ D) The polynomial has no like terms.

┃ The terms have different degrees, indicating they are not like terms.

When analyzing the polynomial $5x^2 - 3x + 7$, which statements are true?

Hint: Evaluate each statement based on the polynomial's structure.

☐ **A) The polynomial has three terms. ✓**
☐ **B) The degree of the polynomial is 2. ✓**
☐ **C) The coefficient of the linear term is -3. ✓**
☐ **D) The constant term is 7. ✓**

┃ The true statements are that the polynomial has three terms, the degree is 2, and the coefficient of the linear term is -3.
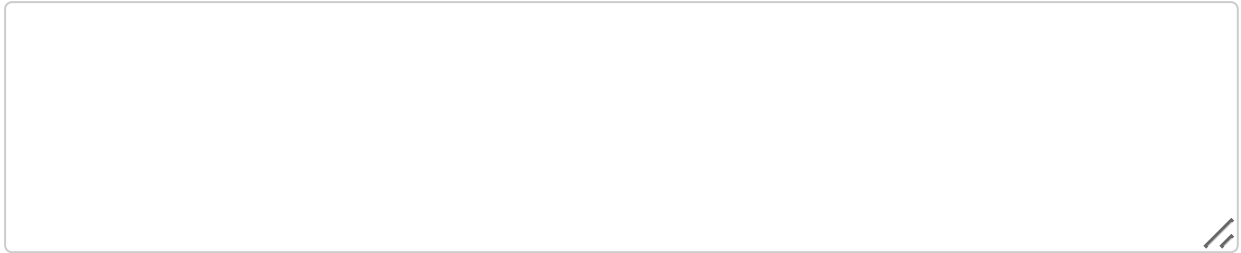
Evaluate the polynomial $x^3 - 6x^2 + 11x - 6$ and determine if it can be factored into linear factors. Explain your reasoning.

Hint: Use the Rational Root Theorem or synthetic division to evaluate.

┃ **The polynomial can be factored into linear factors, and the reasoning involves finding its roots.**

Create a polynomial that represents the area of a triangle with a base of $2x + 3$ and a height of $x - 1$. Write the polynomial and explain your reasoning.

Hint: The area of a triangle is given by $A = \frac{1}{2} \times base \times height$.

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The polynomial for the area is $A = \frac{1}{2}(2x + 3)(x - 1)$, which simplifies to a quadratic expression.

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