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Polynomials Quiz Questions and Answers PDF

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What is the degree of the polynomial $2x^3 + 5x^2 - x + 8$?

○ 1
○ 2
○ **3 ✓**
○ 4

> The degree of a polynomial is determined by the highest power of the variable in the expression. In the polynomial $2x^3 + 5x^2 - x + 8$, the highest power is 3, making the degree of the polynomial 3.

Which of the following are special factoring formulas? (Select all that apply)

☐ **Difference of squares ✓**
☐ **Sum of cubes ✓**
☐ **Perfect square trinomial ✓**
☐ Quadratic formula

> Special factoring formulas include the difference of squares, perfect square trinomials, and the sum/difference of cubes. These formulas provide efficient methods for factoring specific types of polynomial expressions.

Which of the following are examples of cubic polynomials? (Select all that apply)

☐ **$x^3 + 2x^2 + x + 1$ ✓**
☐ $2x^2 + 3x + 4$
☐ **$4x^3 - x$ ✓**
☐ $x^4 - x^3 + x$

> Cubic polynomials are defined as polynomials of degree three, which means they have the form $ax^3 + bx^2 + cx + d$, where a, b, c, and d are constants and a is not zero. Examples of cubic polynomials include expressions like $2x^3 + 3x^2 - x + 5$ and $-x^3 + 4x - 2$.

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What is the sum of the polynomials $x^2 + 3x + 2$ and $2x^2 - x + 4$?

- ⃝ **$3x^2 + 2x + 6$** ✓
- ⃝ $3x^2 + 4x + 6$
- ⃝ $x^2 + 2x + 6$
- ⃝ $3x^2 + 2x + 4$

> To find the sum of the polynomials, combine like terms from both expressions. The resulting polynomial is $3x^2 + 2x + 6$.

Which of the following is a factor of $x^2 - 4x + 4$?

- ⃝ $x - 1$
- ⃝ **$x - 2$** ✓
- ⃝ $x - 3$
- ⃝ $x - 4$

> The expression $x^2 - 4x + 4$ can be factored as $(x - 2)(x - 2)$ or $(x - 2)^2$. Therefore, $(x - 2)$ is a factor of the given quadratic expression.

What is the remainder when $x^3 - 2x^2 + 3$ is divided by $x - 1$?

- ⃝ 0
- ⃝ **1** ✓
- ⃝ 2
- ⃝ 3

> To find the remainder of the polynomial $x^3 - 2x^2 + 3$ when divided by $x - 1$, we can use the Remainder Theorem, which states that the remainder is equal to the value of the polynomial evaluated at $x = 1$.

Which polynomial represents a quadratic expression?

- ⃝ $x^3 + 2x^2 + x$
- ⃝ **$3x^2 + 4x + 5$** ✓
- ⃝ $5x + 1$
- ⃝ $x^4 - x^2 + 1$

> A quadratic expression is represented by a polynomial of degree 2, typically in the form $ax^2 + bx + c$, where a, b, and c are constants and a is not equal to zero.

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What are the roots of the polynomial x^2 - 5x + 6? (Select all that apply)

☐ 1
☐ **2** ✔
☐ **3** ✔
☐ 4

> The roots of the polynomial x^2 - 5x + 6 can be found by factoring or using the quadratic formula. The roots are x = 2 and x = 3.

What is the leading coefficient of the polynomial 5x^4 - 2x^3 + x - 6?

○ **5** ✔
○ -2
○ 1
○ -6

> The leading coefficient of a polynomial is the coefficient of the term with the highest degree. In the polynomial 5x^4 - 2x^3 + x - 6, the leading coefficient is 5, which is the coefficient of the x^4 term.

Which of the following are considered polynomials? (Select all that apply)

☐ **3x^2 + 2x + 1** ✔
☐ x^{-1} + 4
☐ **5x^3 - 2x + 7** ✔
☐ √x + 1

> Polynomials are algebraic expressions that consist of variables raised to non-negative integer powers and coefficients. Examples of polynomials include expressions like 2x^2 + 3x + 1 and 5, while expressions like 1/x and √x are not considered polynomials.

Which of the following expressions can be factored using the difference of squares formula? (Select all that apply)

☐ **x^2 - 9** ✔
☐ x^2 + 4
☐ **4x^2 - 16** ✔
☐ x^2 - 2x + 1

> The difference of squares formula can be applied to expressions of the form a^2 - b^2, where both a and b are perfect squares. Look for expressions that fit this pattern to determine which can be factored using

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> this formula.

Which of the following is a binomial?

○ $5x^2 + 3x + 1$
○ **$x^2 - 4$ ✔**
○ x^3
○ $2x^2 + 4x + 6$

> A binomial is a polynomial with exactly two terms. Examples include expressions like 'x + y' or '3a - 4' which fit this definition.

Which of the following is a monomial?

○ $4x + 2$
○ **$7x^2$ ✔**
○ $x^2 - 3x + 1$
○ $x^3 + x$

> A monomial is a single term algebraic expression that can be a number, a variable, or a product of numbers and variables raised to non-negative integer powers. Examples include 3x, 5, and 2xy^2, while expressions like x + 2 or 3x^2 - 4 are not monomials because they contain more than one term.

Which of the following operations can be performed on polynomials? (Select all that apply)

☐ **Addition ✔**
☐ **Subtraction ✔**
☐ **Multiplication ✔**
☐ **Division ✔**

> Polynomials can undergo various operations such as addition, subtraction, multiplication, and division. Additionally, they can be evaluated for specific values and factored into simpler polynomials.

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