

## Algebra 2 Exam V - Review

Key

Use **synthetic** substitution to evaluate the polynomial for the given value.

1.  $P(x) = 6x^2 - 14x + 2$  for  $x = 2$

$$\begin{array}{r|rrr} 2 & 6 & -14 & 2 \\ & & 12 & -4 \\ \hline & 6 & -2 & -2 \end{array} \quad P(2) = -2$$

Rewrite in standard form. Identify the degree of the polynomial, leading coefficient, and the number of terms.

2.  $3x - 5x^2 + 14 + 2x^3$  Standard Form  $2x^3 - 5x^2 + 3x + 14$   
Lead Coefficient 2 Degree 3 Number of Terms 4

3.  $2x^2 - 3 + 7x^5 + 3x^4 - 14x$  Standard Form  $7x^5 + 3x^4 + 2x^2 - 14x - 3$   
Lead Coefficient 7 Degree 5 Number of Terms 5

Add or subtract. Write your answer in standard form.

4.  $(6x - 32 + 5x^2) + (14x^3 - 17x + 8) = 14x^3 + 5x^2 - 11x - 24$

5.  $(x^3 - 4x + 3) - (3x^3 + 7x - 6) = -2x^3 - 11x + 9$

Multiply. Write your answer in standard form.

6.  $3y(4x^2 + 5xy) = 12x^2y + 15xy^2$

7.  $(a+2)(2a^2 - 5a + 3) = 2a^3 - a^2 - 7a + 6$

8.  $(x+4)^3 = (x+4)(x+4)(x+4)$   
 $x^3 + 12x^2 + 48x + 64$

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Divide the following polynomials using an appropriate method.

9.  $(2x^3 + 3x^2 - 2x - 6) \div (x^2 - 1)$

$$\begin{array}{r} 2x + 3 + \frac{-3}{x^2-1} \\ x^2-1 \overline{) 2x^3 + 3x^2 - 2x - 6} \\ \underline{- 2x^3 \phantom{- 2x} - 6} \\ 3x^2 - 2x - 6 \\ \underline{- 3x^2 \phantom{- 2x} - 3} \\ -3 \end{array}$$

10.  $(2x^4 - 6x^2 + 3x + 6) \div (x - 2)$

$$\begin{array}{r} 2 \overline{) 20-636} \\ \underline{48414} \\ 2427 \underline{) 20} \end{array}$$

$$2x^3 + 4x^2 + 2x + 7 + \frac{20}{x-2}$$

11. When the remainder of a polynomial division is zero it means that the divisor is a factor of the polynomial.

