

5.1 CA #1 - Operations on Polynomials

Date _____ Period _____

Name the degree and leading coefficient

1) $-10 + 8v^6 - 7v$

2) $1 - 3v^3 + v^2 + 7v$

Simplify each expression.

3) $(n^3 - n^4 + 6n^2) - (n^3 + 1) + (8n^2 - 6n^3)$

Find each product.

4) $(3n + 6)(4n^2 + 5n - 3)$

5) $(4k - 4)^2$

Factor each completely.

6) $a^2 + 9$

7) $16p^2 - 49$

8) $3x^6 - 20x^3 + 32$

9) $9xy + 6x^2 - 24y - 16x$

Solve each equation using your new factoring abilities! Find ALL solutions. (hint: Use the quadratic formula if the quadratic expression does not factor).

10) $x^3 - 4x = 0$

11) $x^3 + 6x^2 + 13x = 0$

12) $x^4 - 4 = 0$

13) $x^4 - 2x^2 - 3 = 0$

14) $x^4 - 2x^2 - 15 = 0$

15) $x^6 - 2x^4 - 25x^2 + 50 = 0$

Answers to 5.1 CA #1 - Operations on Polynomials (ID: 1)

- 1) Degree: 6 LC: 8 2) Degree: 3 LC: -3 3) $-n^4 - 6n^3 + 14n^2 - 1$
4) $12n^3 + 39n^2 + 21n - 18$ 5) $16k^2 - 32k + 16$ 6) Not factorable
7) $(4p + 7)(4p - 7)$ 8) $(3x^3 - 8)(x^3 - 4)$ 9) $(3x - 8)(3y + 2x)$
10) Factors to: $x(x + 2)(x - 2) = 0$
 Roots: $\{0, -2, 2\}$
11) Factors to: $x(x^2 + 6x + 13) = 0$
 Roots: $\{0, -3 + 2i, -3 - 2i\}$
12) Factors to: $(x^2 - 2)(x^2 + 2) = 0$
 Roots: $\{\sqrt{2}, -\sqrt{2}, i\sqrt{2}, -i\sqrt{2}\}$
13) Factors to: $(x^2 + 1)(x^2 - 3) = 0$
 Roots: $\{i, -i, \sqrt{3}, -\sqrt{3}\}$
14) Factors to: $(x^2 + 3)(x^2 - 5) = 0$
 Roots: $\{i\sqrt{3}, -i\sqrt{3}, \sqrt{5}, -\sqrt{5}\}$
15) Factors to: $(x^2 - 2)(x^2 - 5)(x^2 + 5) = 0$
 Roots: $\{\sqrt{2}, -\sqrt{2}, \sqrt{5}, -\sqrt{5}, i\sqrt{5}, -i\sqrt{5}\}$