2.4 Solving Polynomial Equations Worksheet

This document was composed and formatted by Annie Bernatchez.

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1) Determine the solutions of the following polynomials.

a) $(3x + 2)(x + 9)(x - 2) = 0$

b) $(x^2 + 1)(x - 4) = 0$

2) Determine the solutions of the following polynomials by factoring. Use the tools you have learned this unit to help you. (remainder theorem, integral zero theorem, division etc.)

a) $x^3 - 4x^2 - 3x + 18 = 0$

b) $x^3 - 3x^2 - 4x + 12 = 0$

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c) $x^4 - x^3 - 11x^2 + 9x + 18 = 0$

d) $x^3 - 64 = 0$

$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$, $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

e) $2x^3 - 7x^2 + 10x - 5 = 0$

3) Solve each equation by first factoring the sum or difference of cubes.

a) $x^3 - 8 = 0$

b) $x^3 + 27 = 0$

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4) Solve by factoring

a) $x^3 - 4x^2 - 7x + 10 = 0$

b) $2x^3 - 11x^2 + 12x + 9 = 0$

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

Answer Key

1) a) $x = -\frac{2}{3}, -9, 2$ b) $x = 4$

2) a) $x = -2, 3$ b) $x = 2, 3, -2$ c) $x = -1, 2, 3, -3$ d) $x = 4$ (only real solution) e) $x = 1$ (only real solution)

3) a) $x = 2$ b) $x = -3$

4) a) $x = 1, 5, -2$ b) $x = 3, -\frac{1}{2}$ c) $x = -1, 2$

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