W4 – 2.3 – Solving Polynomial Equations

MHF4U

Jensen

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

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) $x^3 + 27 = 0$

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

1a) $\left(-\frac{2}{3}, 0\right), (-9,0), (2,0)$ **b)** (4,0)

2a) (-2,0) and (3,0) **b)** (3,0), (-2,0), (2,0) **c)** (-1,0), (2,0), (-3,0), (3,0) **d)** (4,0) **e)** (1,0)

3)a) (2, 0) **b)** (-3, 0)

4)a) (5, 0), (-2, 0), (1, 0) **b)** (-0.5, 0) and (3, 0) **c)** (-1, 0) and (2, 0)