

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

$$\mathbf{c)} \ x^4 - x^3 - 11x^2 + 9x + 18 = 0$$

$$\mathbf{d)} \ x^3 - 64 = 0$$

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

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

$$\mathbf{e)} \ 2x^3 - 7x^2 + 10x - 5 = 0$$

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

**a)**  $x^3 - 8$

**b)**  $x^3 + 27$

**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)  $(-\frac{2}{3}, 0), (-9, 0), (2, 0)$     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)

3a) (2, 0)    b) (-3, 0)

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