

LT #3: Solving Polynomial Equations (3 points each)

1. Write the equation of a polynomial function in standard form.

$$f(x) = (x - 1)(x + 1)(x^2 + 4)$$

$$(x^2 - 1)(x^2 + 4)$$

$$x^4 + 4x^2 - x^2 - 4$$

2. Write the equation of the polynomial in standard form.

$$f(x) = (x + 9)^2 \quad x^2 + 9x + 9x + 81$$

$$(x + 9)(x + 9)$$

Find all the complex zeros by solving the polynomial equation.

3. $x^3 + 2x^2 - 9x - 18 = 0$

$$x^2(x + 2) - 9(x + 2) = 0$$

$$(x^2 - 9)(x + 2) = 0$$

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

4. $x^3 + 4x^2 + 3x = 0$

$$x(x^2 + 4x + 3) = 0$$

$$x(x + 3)(x + 1) = 0$$

5. $x^3 - 2x^2 + 5x = 0$

$$x(x^2 - 2x + 5) = 0$$

$x = 0$

$$\frac{2 \pm \sqrt{4 - 4(1)(5)}}{2(1)} = \frac{2 \pm \sqrt{4 - 20}}{2}$$

$$\frac{2 \pm \sqrt{-16}}{2} = \frac{2 \pm 4i}{2} = 1 \pm 2i$$

+2 1. $x^4 + 3x^2 - 4$

+2 2. $x^2 + 18x + 81$

+3 3. $x = 3, -3, -2$

+3 4. $x = 0, x = -3, x = -1$

+3 5. $x = 0, 1 \pm 2i$