HN Math III: Unit 3 – Day 5 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**SOLVING CUBICS**

1. **Solve the following polynomials by factoring:**
   1. b.
2. **Solve by graphing:**

**Ex 1:** **Ex 2:**

How many solutions *should* we get? \_\_\_\_\_\_ How many solutions *should* we get? \_\_\_\_\_\_

How many are real? \_\_\_\_\_ How many are real? \_\_\_\_\_

What are the real solutions? \_\_\_\_\_ What are the real solutions? \_\_\_\_\_

If solutions are missing, they are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. **Find ALL zeros of the following polynomials.**

**Ex 3:**

a) How many total roots are there? \_\_\_\_\_\_\_

b) Find the roots in the calculator. How many do you see? \_\_\_\_\_ Root: \_\_\_\_\_\_

c) Use this root as the divisor in a synthetic division problem:

d) So the factors are: (x )( ). We know that x = \_\_\_\_, so how do we find the other 2?

e) Find the other solutions:

Final Solutions:

**Ex 4**:

1. How many total zeros are there? \_\_\_\_\_\_\_
2. How many are real? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. So, there must be \_\_\_\_\_ imaginary solutions. Use the real zero to divide:
4. Use the quadratic formula/completing the square to find the other zeros.

Final Solutions:

**Ex 5**: **Ex 6:**

**Practice:**

Find all the roots of the following polynomials.

1. 2.
2. 4.