Notes Quadratics

**Quadratic equations can be solved using the process of completing the square. More importantly completing the square allows us to take the general form of a quadratic and turn it into vertex form.**

Perfect Trinomial Squares:

(x + 7)2 = x2 + 14x + 49 (x – 4)2 = x2 – 8x + 16

What would we need to add to each to make them perfect trinomial squares?

x2 + 8x + \_\_\_\_ = ( )2 x2 – 12x + \_\_\_\_ = ( )2

x2 – 3x + \_\_\_\_ = ( )2 x2 + 5x + \_\_\_\_ = ( )2

Solve each by completing the square:

Ex 1: x2+ 4x – 5 = 0 Ex 2: -2x2 – 12x = 16

x2+ 4x + \_\_\_\_ = 5 -2(x2 + 6x + \_\_\_\_) = 16

x2+ 4x + **4** = 5 + **4** -2( x2 + 6x + **9 )** = 16 + **-18**

(x + 2)2 = 9 -2(x + 3)2 = -2 (x + 3)2 = 1

x + 2 = 3 x + 3 = 1

x = 1 x = -5 Rational Roots x = -4 x = -2

Ex 3: 2x2 – 10x =  Ex 4: 3x2 + 6x + 15 = 0

2(x2 – 5x + \_\_\_\_ =  + \_\_\_\_ 3(x2 + 2x + \_\_\_\_ ) = -15 + \_\_\_\_

2(x2 – 5x + ) =  +  3(x2 + 2x +1) = -12

(x – )2 = •  (x + 1)2 = -4

(x – )2 = 9 x + 1 = 2*i*

x – 2.5 = 3

x = 5.5 x = -.5 x = -1 + 2*i* x = -1 – 2*i*  Complex Roots