**5.3 Solving Trigonometric Equations**

**Objective: Solve trig functions using standard algebraic techniques, of quadratic type, involving multiple angles, and using inverse.**

Remember trig functions have general solutions (since there are infinite answers):

Ex: on [0, 2 has answers at both 0 and but if you go   
 around the circle again then there will be more answers   
 in the same location… thus and   
 where n is number of rotations

**Example 1: Algebraic Techniques (combine like terms)**

* so find answers on [0, 2

**Example 2: Algebraic Techniques (extracting square roots)**

=

* so find answers on [0,

**Example 3: Algebraic Techniques (factoring)**

**Day 2:**

**Example 4: Quadratic Type (factoring or graph)**

on the interval [0, 2

**and**

**-or- Graph and find roots.**

**x = 1.571 x = 3.665 x = 5.760 (same as above)**

**Example 5: Rewriting with a single Trigonometric Function**

*multiple by -1*

**and**

**Example 6: Squaring and Converting to Quadratic Type**

Find all solutions of

*square both sides*

*Pythagorean id*

**and**

**But… since you squared in the beginning you need to check for extraneous solutions…**

**Day 3:**

**Example 7: Functions of Multiple Angles**

**Example 8: Functions of Multiple Angles**

*remember tan on interval [0,*

**Example 9: Using Inverse Functions**

*Pythagorean id*

Recall range of inverse   
 tangent is (-

You can estimate arctan

**Homework**

Day 1: Pg 394 #5-7, 11-19 (odd)

Day 2: Pg 394 #9, 27-30, 33-34, 49

Day 3: Pg 394 #21, 39-42, 63, 75