# MTH 30 LECTURE NOTES (Ojakian)

## Topic 6: Solving Inequalities

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**OUTLINE**

References: 1.6

1. Absolute Value In Equations
2. Absolute Value In Inequalities

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1. Solving Equations with Absolute Value
   (a) Strategy:
      i. Isolate absolute value
      ii. Set inside absolute value to positive and negative of other side
      iii. Check that solutions do not make absolute value = negative!
   (b) Problems
      i. $|x| = 7$
      ii. $|x| = -7$
      iii. $|5x + 2| - 4 = 9$
2. Solving Inequalities with Absolute Value
   (a) Strategy:
      i. Isolate absolute value (so positive number on other side)
      ii. Cases on $>$ versus $<$ (for $A$ positive)
         A. If $|blah| < A$, then solve $-A < blah < A$
         B. If $|blah| > A$, then solve: $blah > A$ OR $blah < -A$
      iii. Solve
   (b) Problems
      Textbook Section 1.6, exercises: 31, 29, 30
      Problem: $-\frac{1}{2}|4x - 5| < -3$
      Application: Section 1.6, exercise 62