

**Math5700 Homework #2**  
**Fall, 2014**

From the book, do these problems:

- 2.1.1 #3, 5, 8, 10, 12(a,b)
- 2.1.2 #6
- 2.1.3 #1, 5, 8
- 2.1.4 #1, 9

And, then also do the following problems.

A. Solve these inequalities.

- (1)  $|4 - 2x| + 1 \geq 11$
- (2)  $(y + 4)^4 + 5 < 0$
- (3)  $\frac{2x^2 + 10x - 16}{x - 4} \leq 3$
- (4)  $\log_4(w - 1)^4 + 2 \leq \log_4(2w - 2)$
- (5)  $\log_4(w - 1)^3 + 2 \leq \log_4(2w - 2)$
- (6)  $-2(9^{x^6 - 1}) \geq 36$
- (7)  $x(2x - 1)(x - 3)^2 < 0$
- (8)  $\frac{1}{x + 2} \geq \frac{2}{x - 2}$

B. If you're given this inequality  $\frac{13}{31} < \frac{8}{19}$  and you need to verify if it is in fact correct, how would you explain this to your students (without a calculator)? And, would it be reasonable to "cross multiply" to check the validity of the statement? Why or why not?

What if the inequality is  $-\frac{13}{31} < -\frac{8}{19}$  instead?

What if the inequality is  $\frac{13}{31} < \frac{8}{19x}$  instead?

C. In which setting or under what conditions do you need to consider different cases in solving an inequality?