Math5700, Capstone Course, Spring 2013
Homework 3

Name: _____

Date: _____
(Please staple this as the cover sheet to the Homework #3 that you turn in.)

1. Solve these inequalities.

(a) $|4-2x|+1\geq 11$

(b) $(y+4)^4+5<0$

(c) $\frac{2x^2+10x-16}{x-4}\leq 3$

(d) $\log_4(w-1)^4+2\leq\log_4(2w-2)$

(e) $\log_4(w-1)^3+2\leq\log_4(2w-2)$

(f) $-2(9^{x^6-1})\geq 36$

(g) $x(2x-1)(x-3)^2<0$

(h) $\frac{1}{x+2}\geq\frac{2}{x-2}$

2. 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?

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

4. Simplify these expressions.

(a) $\sqrt{x^2}$

(b) $(\sqrt{x})^2$

(c) $\sqrt[3]{x^3}$

(d) $\sqrt{(-3)^2}$