COLLEGE ALGEBRA

NAME: Holly Cooper

GPS # 24 **2.8 ADDITIONAL EQUATIONS AND INEQUALITIES II**

Class Time: T/Th 11:30 Date: 2-21-08

Useful Guidelines:

* To solve an equations with radicals:
  - Step 1: Isolate one radical term on one side of the equation.
  - Step 2: Raise both sides of the equation to a power that is the same as the index of the radical.
  - Step 3: Solve the resulting equation; if it still contains a radical, repeat step 1 and step 2.
  - Step 4: Check all potential solutions in the original equation.
* To solve a quadratic inequality:
  - Step 1: Write the inequality as a quadratic equation and solve.
  - Step 2: Use the numbers solved from step 1 to divide a number line into intervals.
  - Step 3: Substitute a test number from each interval into the original inequality to determine the solution set.
  - [Note: You need to consider the end points separately.]

20/20 Good job!

Solve each equation.

1. a) $(\sqrt{3x+1})^2=(4)^2$

$3x+1=16$, $-1\ -1$

$\frac{3x}{3}=\frac{15}{3}$

$x=5$

b) $\sqrt{x-12}-8=0$

$+8\ +8$

$(\sqrt{x-12})^2=(8)^2$

$x-12=64$, $+12\ +12$

$x=76$

2. a) $\sqrt{2y+6}-8=-4$

$+8\ +8$

$(\sqrt{2y+6})^2=(4)^2$

$2y+6=16$, $-6\ -6$

$\frac{2y}{2}=\frac{10}{2}$

$y=5$

b) $(\sqrt[3]{m+7})^3=(\sqrt[3]{3m-21})^3$

$m+7=3m-21$, $-m\ \ -m$

$7=2m-21$, $+21\ \ +21$

$\frac{28}{2}=\frac{2m}{2}$

$m=14$

3. a) $((x+6)^3)^{\frac{3}{3}}=(25)^{\frac{3}{2}}=(5^2)^{\frac{3}{2}}$

$x+6=125$, $-6\ -6$

$x=119$

b) $((w-8)^4)^{\frac{4}{4}}=(8)^{\frac{2}{3}}$

$w-8=16$, $+8\ +8$

$w=24$

v. neat!

4. Solve each inequality and graph the solution set.

a) $x^2-2x-15>0$ y-intercept.

$A=1$, $B=-2$, $C=-15$

$x=\frac{-b}{2a}=\frac{-(-2)}{2\cdot1}=1$

$f(x)=-1-2-15=-16$

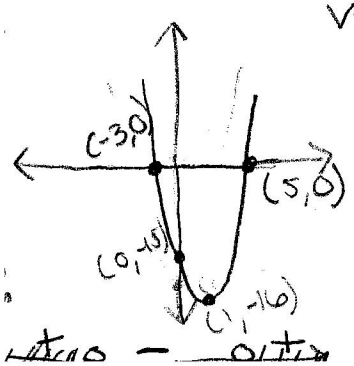
vertex $=(1,-16)$

$(x+3)(x-5)=0$

$x+3=0$, $-3\ -3$ → $x=-3$

$x-5=0$, $+5\ +5$ → $x=5$

x-intercept



b) $4t^2-48t+80\leq0$ less than zero you look at negatives

$A=4$, $B=-48$, $C=80$

$x=\frac{-(-48)}{2(4)}=6$

$4(6)^2-48(6)+80=-64$

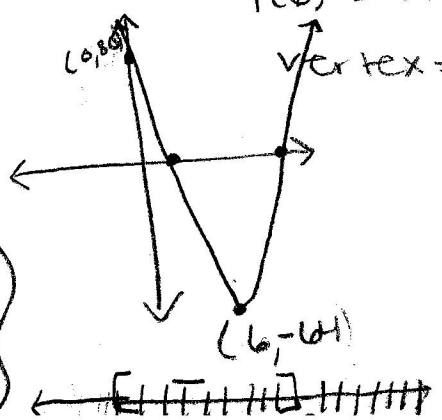
vertex $=(6,-64)$

$4(t^2-12t+20)=0$

$t^2-12+20=0$

$(t-10)(t-2)=0$

$t=10$ $t=2$



Solution set: [10, 2]