

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.]

*no Quad
no Ineq!*

Solve each equation.

1. a) $2(\sqrt{3x+1} = 4)^2$
 $3x+1 = 16$
 $3x = 15$
 $x = 5$

b) $\sqrt{x-12} - 8 = 0$
 $2(\sqrt{x-12}) = 8^2$
 $x-12 = 64$
 $x = 76$

2. a) $\sqrt{2y+6} - 8 = -4$
 $(\sqrt{2y+6})^2 = (4)^2$
 $2y+6 = 16$
 $2y = 10$
 $y = 5$

b) $(\sqrt[3]{m+7})^3 = (\sqrt[3]{3m-21})^3$
 $m+7 = 3m-21$
 $7 = 2m-21$
 $-28 = 2m$
 $-14 = m$

3. a) $[(x+6)^3]^{2/3} = (25)^{3/2}$
 $x+6 = (5)^{3/2}$
 $x+6 = 125$
 $x = 119$

b) $((w-8)^4)^{3/4} = 8$
 $w-8 = (64)^{1/3}$
 $w-8 = 16$
 $w = 24$

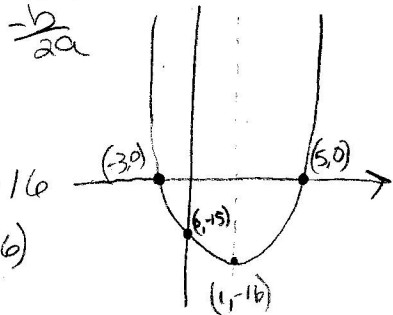
4. Solve each inequality and graph the solution set.

a) $x^2 - 2x - 15 > 0$

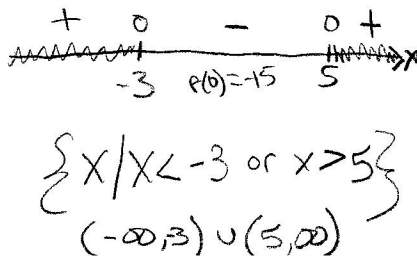
$a=1$
 $b=-2$
 $c=-15$

$\frac{a}{2} = 1$

$F(1) = 1 - 2 - 15 = -16$
 vertex: $(1, -16)$



$x^2 - 2x - 15 = 0$
 $(x+3)(x-5) = 0$
 $x+3 = 0$ or $x-5 = 0$
 $x = -3$ or $x = 5$



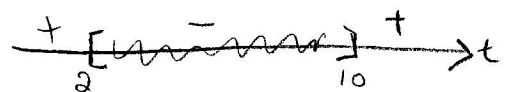
b) $4t^2 - 48t + 80 \leq 0$

$a=4$
 $b=-48$
 $c=80$
 $\frac{-b}{4(a)} = -6$

$F(-6) = 4 - 48 - 15 = -124$
 vertex: $(-6, -124)$

$\{t | 2 \leq t \leq 10\}$
 $[2, 10]$

$4t^2 - 48t + 80 = 0$
 $4(t^2 - 12t + 20) = 0$
 $t^2 - 12t + 20 = 0$
 $(t-10)(t-2) = 0$
 $t = 10$ or $t = 2$



So neat!