MAC 1147 - Quiz 2 **Name:**

For full credit, you must show all work and circle your final answer.

1 Solve:
$\sqrt{x-3}+\sqrt{x}=3$

The easiest way to solve this is isolate the most complicated radical term on one side of the equation:
$\sqrt{x-3}=3-\sqrt{x}$
$(\sqrt{x-3})^2=(3-\sqrt{x})^2$
$x-3=9-6\sqrt{x}+x$
$-12=-6\sqrt{x}$
$2=\sqrt{x}$
$x=4$

2 Solve for x:
$3-|x+1|=-1$

The easiest way to solve this is to isolate the absolute value term on one side of the equation, and solve for both positive and negative cases:
$3-|x+1|=-1$
$|x+1|=4$
Here we have two cases: that $(x+1)$ is positive and that $(x+1)$ is negative :
Case 1: $(x+1)$ is positive
$x+1=4$
$x=3$
Case 2: $(x+1)$ is negative
$-(x+1)=4$ or you can write $x+1=(-4)$
$x=-5$

3 Solve the inequality:
$-3\leq\frac{1}{3}(3-x)<2$

You have to remember that any operation you do on one part of the inequality, must be done on the others:
$3*-3\leq 3*\frac{1}{3}(3-x)<3*2$
$-9\leq(3-x)<6$
$(-3)+(-9)\leq -3+(3-x)<-3+6$
$-12\leq -x<3$
$12\geq x>3$
Remember to switch the signs when you multipy/divide by a negative.