20080116 Quiz 1
Student name:

Please show your work so that I can follow it. Circle the final answer.

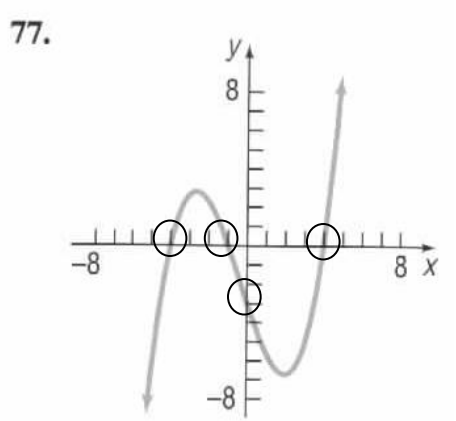
1. A line contains the points $(1,3)$ and $(-1,2)$. Find the slope-intercept form of the equation for the line.

   First find the slope
   $$m = \frac{3-2}{1-(-1)} = \frac{1}{2}$$

   Then use one point and the slope
   $$\frac{1}{2} = \frac{y-3}{x-1}$$

   Then solve for y
   $$x - 1 = 2(y-3) = 2y - 6$$
   $$x - 1 + 6 = 2y$$
   $$2y = x + 5$$
   $$\boxed{y = \frac{1}{2}x + \frac{5}{2}}$$

2. Mark and list **all** intercepts of the following graph.



Y-intercepts: -3

X-intercepts: -4,-1,4

Turn over for more problems

3. Solve by completing the square:
   $x^2 + 4x = 21$
   Target: $(x+2)^2 \rightarrow x^2 + 4x + 4$

   $x^2 + 4x + 4 = 21 + 4$
   $(x+2)^2 = 25$
   $x + 2 = \pm 5$
   $x = -2 \pm 5$
   $\boxed{x = -7 \; or \; x = 3}$

4. How many real solutions does this equation have? Show your work.
   $2x^2 - 6x + 7$

   Discriminant: $b^2 - 4ac = (-6)^2 - 4 * 2 * 7 = 36 - 56 = -30 < 0$
   The equation has no real solutions