**Think It Through**
January 11

1. Sketch the graph of each of the following absolute value equations and write each equation in piecewise form:
   (a) $y = |x|$
   (b) $y = |2x + 1|$
   (c) $y = |2x| + 1$
   (d) $y = |x^2 - 1|$
   (e) $y = |x^2 + 1|$
   (f) $y = |x^2| + 1$
   (g) $y = |x^2 - 1| - 1$
   (h) $y = |(x + 2)(x + 3)| + 2$
   (i) $y = |x| + x + 1$
   (j) $y = |x^2 - 4| + x^2 - 5$

   For each of the graphs above check your answer using a graphing calaculator

2. Solve each of the following equations:
   (a) $|x + 4| = 2x + 1$

   **Solution:** 3

   (b) $|1 - 4x| = 6x$

   **Solution:** $\frac{1}{10}$

   (c) $|x^2 - 26| = 10$

   **Solution:** $4, 6, -4, -6$

   (d) $|x^2 + 10x + 15| = 6$

   **Solution:** $-9, -7, -3, -1$

3. ★ Find the solution set of the following equation: $2 = |x - 2| + |x + 4|$.

   **Solution:** $x \in [2, 4]$