Please show all your work to ensure full credit.

1. Solve the following equations. If there are extraneous solutions, so state.
   a. $\sqrt{x} + 1 = \sqrt{x + 7}$
   b. $\dfrac{3}{x-2} - \dfrac{5}{x+2} = 5$
   c. $\dfrac{5}{x^2-7x+6} = 3 + \dfrac{1}{x-6}$
   d. $\dfrac{2x^2+2x-10}{x^2-9} - \dfrac{x-2}{x-3} = \dfrac{-2}{x+3}$

2. Solve the following inequalities. Write your answer in graphical and interval notations.
   a. $x^2 - 3x > 10$
   b. $\dfrac{3}{x-2} \le 5$

3. Create a rational equation that has $x = -3$ as an extraneous solution, and $x = 3$ as a solution.
4. Create a radical equation in which as an extraneous solution, and $x = 1$ is a solution.
5. Create a nonlinear inequality that has the solution $(-\infty, -4) \cup (4, \infty)$.
6. Find the distance and midpoint between the points $P(-2,1)$ and $Q(3,5)$.
7. Find the equation of the line below.
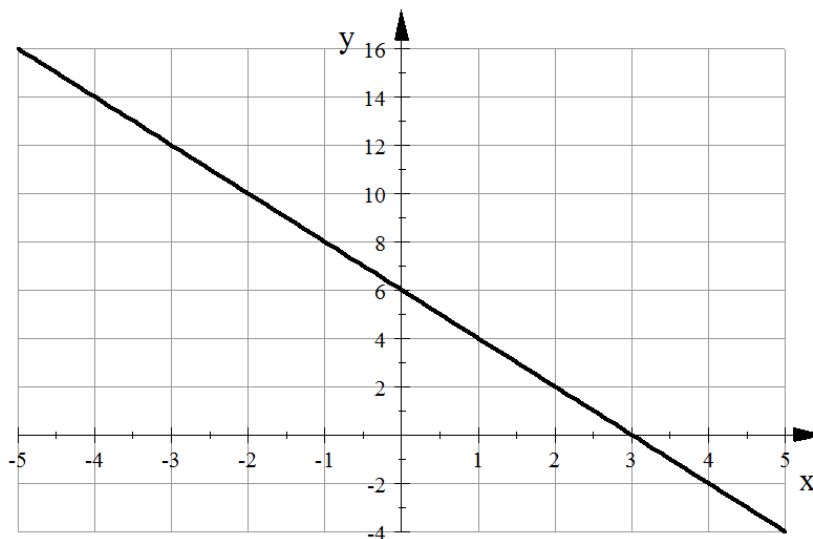
8. Find the equation of the line passing through the point $(-1,1)$ and parallel to the line $2x = -3y + 6$.