Practice 3-3

Solve each system of inequalities by graphing.

1. $\begin{cases} y > x + 2 \\ y \le -x + 1 \end{cases}$
2. $\begin{cases} y \le x + 3 \\ y \ge x + 2 \end{cases}$
3. $\begin{cases} x + y < 5 \\ y < 3x - 2 \end{cases}$
4. $\begin{cases} x - 2y < 3 \\ 2x + y > 8 \end{cases}$
5. $\begin{cases} -3x + y < 3 \\ x + y > -1 \end{cases}$
6. $\begin{cases} x + 2y > 4 \\ 2x - y > 6 \end{cases}$
7. $\begin{cases} 2x \ge y + 3 \\ x < 3 - 2y \end{cases}$
8. $\begin{cases} 3 < 2x - y \\ x - 3y \le 4 \end{cases}$
9. $\begin{cases} y \ge 2 \\ y \ge \lvert x \rvert \end{cases}$
10. $\begin{cases} y < x - 3 \\ y \ge \lvert x - 4 \rvert \end{cases}$
11. $\begin{cases} -2x + y > 1 \\ y > \lvert x \rvert \end{cases}$
12. $\begin{cases} y < -3 \\ y < -\lvert x \rvert \end{cases}$

13. Suppose you are buying two kinds of notebooks for school. A spiral notebook costs \$2, and a three-ring notebook costs \$5. You must have at least six notebooks. The cost of the notebooks can be no more than \$20.
    a. Write a system of inequalities to model the situation.
    b. Graph and solve the system.

14. A camp counselor needs no more than 30 campers to sign up for two mountain hikes. The counselor needs at least 10 campers on the low trail and at least 5 campers on the high trail.
    a. Write a system of inequalities to model the situation.
    b. Graph and solve the system.

Solve each system of inequalities by graphing.

15. $\begin{cases} 2x + y > 2 \\ x - y \ge 3 \end{cases}$
16. $\begin{cases} y \le 3x \\ y \ge -2x + 2 \end{cases}$
17. $\begin{cases} y < 5x - 1 \\ y \ge 7 - 3x \end{cases}$
18. $\begin{cases} y \ge -2x + 2 \\ y \le 3x \end{cases}$
19. $\begin{cases} x + y > 2 \\ 2x - y < 1 \end{cases}$
20. $\begin{cases} y > 3x + 2 \\ y \le -2x + 1 \end{cases}$
21. $\begin{cases} y \ge -2 \\ y \le -\lvert x + 3 \rvert \end{cases}$
22. $\begin{cases} y < x + 3 \\ y > \lvert x - 1 \rvert \end{cases}$
23. $\begin{cases} y > x \\ y < \lvert x + 2 \rvert \end{cases}$