## 3.6 EXERCISES

### PRACTICE

Solve the following linear inequalities by graphing their solution sets. See Example 1.

**1.** $x-3y<6$ **2.** $y<2x-1$ **3.** $x>\frac{3}{4}y$

**4.** $x-3y\geq 6$ **5.** $3x-y\leq 2$ **6.** $\frac{2x-y}{4}>1$

**7.** $y<-2$ **8.** $x+1\geq 0$ **9.** $x+y<0$

**10.** $x+y>0$ **11.** $-(y-x)>-\frac{5}{2}-y$ **12.** $-2y\leq -x+4$

**13.** $5(y+1)\geq -x$ **14.** $3x-7y\geq 7(1-y)+2$ **15.** $x-y<2y+3$

Graph the solution sets that satisfy the following inequalities. See Example 2.

**16.** $y>-3x-6$ or $y\leq 2x-7$ **17.** $y\geq -2$ and $y>1$

**18.** $y\geq -2x-5$ and $y\leq -6x-9$ **19.** $y\leq 4x+4$ and $y>7x+7$

**20.** $x-3y\geq 6$ and $y>-4$ **21.** $x-3y\geq 6$ or $y>-4$

**22.** $3x-y\leq 2$ and $x+y>0$ **23.** $x>1$ and $y>2$

**24.** $x>1$ or $y>2$ **25.** $x+y>-2$ and $x+y<2$

**26.** $y>-2$ and $2y>-3x-4$ **27.** $3y>x+2$ or $4y\leq -x-2$

**28.** $y\leq -x$ and $2y+3x>-4$ **29.** $5x+6y<-30$ and $x\geq 2$

**30.** $6y-2x>-6$ or $y>6$ **31.** $x>-3$ or $y\geq 4$

**32.** $-2y<-3x-6$ or $-3y\geq -6x-18$ **33.** $x<6$ and $x\geq -5$

Graph the solution sets that satisfy the following linear absolute value inequalities. See Example 3.

**34.** $|x-3|<2$ **35.** $|x-3|>2$

**36.** $|3y-1|\leq 2$ **37.** $|2x-4|>2$

**38.** $1-|y+3|<-1$ **39.** $|x+1|<2$ and $|y-3|\leq 1$

**40.** $|x-3|\geq 1$ or $|y-2|\leq 1$ **41.** $|x-y|<1$

**42.** $|x+y|\geq 1$ **43.** $|4x-2y-3|\leq 5$

**44.** $|2x-3|\geq 1$ or $|2y+3|\geq 1$ **45.** $|y-3x|\leq 2$ and $|y|<2$

Match the following inequalities to the appropriate graph.

**46.** $-8y+5x \geq -8y+5$

**47.** $x < -2$ and $x \geq -5$

**48.** $\left|-7x-4y+23\right| \leq 16$

**49.** $y \leq 3x-6$ and $y > 2x-4$

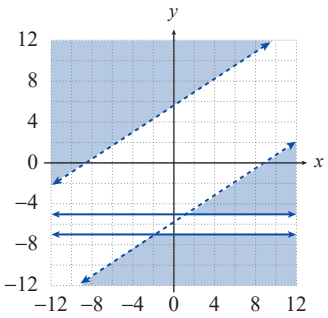
**50.** $\left|3y-2x\right| > 17$ and $\left|y+6\right| \geq 1$

**51.** $4\left(y+2\right) < -x$

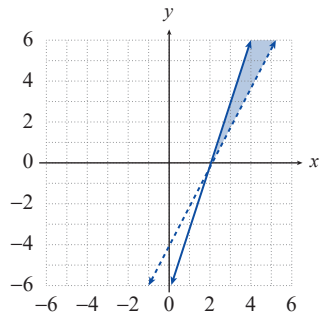
**52.** $-y < 6x+3$ or $4y \geq 3x-6$

**53.** $\left|7x+4\right| \leq 5$ or $\left|7y+4\right| \leq 5$

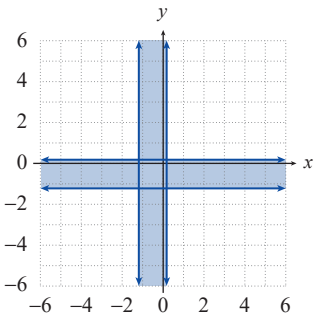
**a.**




**b.**




**c.**

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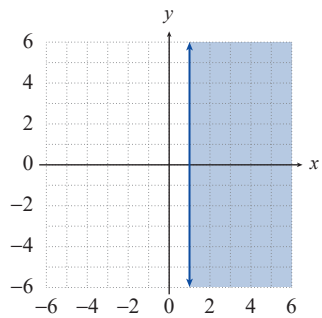


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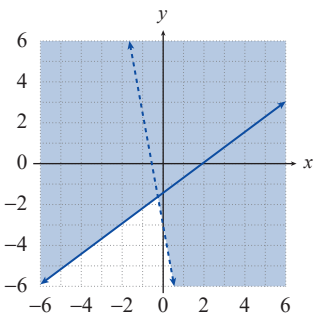


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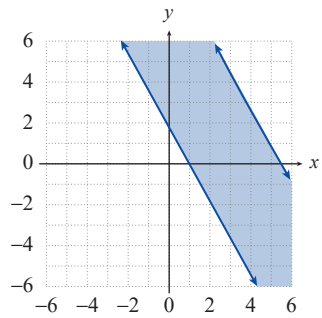


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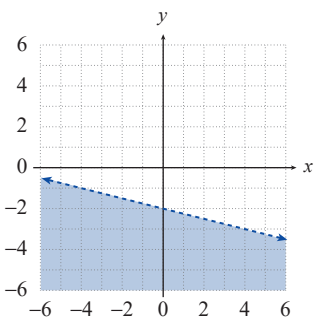
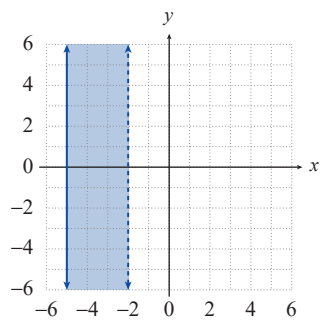



**h.**



## APPLICATIONS

**54.** It costs Happy Land Toys $5.50 in variable costs per doll produced. If total costs must remain less than $200, write a linear inequality describing the relationship between cost and dolls produced.

**55.** Trish is having a garden party where she wants to have several arrangements of lilies and orchids for decoration. The lily arrangements cost $12 each and the orchids cost $22 each. If Trish wants to spend less than $150 on flowers, write a linear inequality describing the number of each arrangement she can purchase. Graph the inequality.

**56.** Rob has 300 feet of fencing he can use to enclose a small rectangular area of his yard for a garden. Assuming Rob may or may not use all the fencing, write a linear inequality describing the possible dimensions of his garden. Graph the inequality.

**57.** Flowertown Canoes produces two types of canoes. The two-person model costs $73 to produce and the one-person model costs $46 to produce. Write a linear inequality describing the number of each canoe the company can produce and keep costs under $1750. Graph the inequality.