Exercise Set 1.4: Graphs of Linear Inequalities

For problems 1 – 4, determine whether the given point is a solution to the linear inequality.

1. $(0, 3)$; $x - y > -3$

2. $(-2, -1)$; $-2x + 4y \geq 8$

3. $(3, -5)$; $y \leq 3x - 1$

4. $(-4, 7)$; $x + y > 1$

For problems 5 – 12, sketch the graph of each linear inequality.

5. $y < -4x + 8$

6. $y > 6x + 4$

7. $y \geq 3x - 1$

8. $y \leq -2x - 3$

9. $10x - 5y < 0$

10. $2x + 3y \geq 6$

11. $-4x - 5y \leq 20$

12. $-4x + 3y < -24$

For problems 13 – 28, sketch the graph of each system of linear inequalities.

13. $\begin{cases} y < x + 1 \\ y \geq -x - 1 \end{cases}$

14. $\begin{cases} y > x - 2 \\ y \geq -x - 2 \end{cases}$

15. $\begin{cases} y \leq 2x - 1 \\ y \leq -3x + 9 \end{cases}$

16. $\begin{cases} y \leq -4x + 2 \\ y \geq 3x - 3 \end{cases}$

17. $\begin{cases} y > \frac{1}{3}x \\ 12x - 4y > 12 \end{cases}$

18. $\begin{cases} y < \frac{1}{4}x \\ -2x + y < -2 \end{cases}$

19. $\begin{cases} 6x - 8y \geq 18 \\ -x - y > -2 \end{cases}$

20. $\begin{cases} 5x - 4y < 10 \\ x + y \leq 1 \end{cases}$

21. $\begin{cases} 2x + 5y \geq 8 \\ 3x + 2y \geq 6 \\ y \leq 2 \end{cases}$

22. $\begin{cases} 2x + y \geq 6 \\ 2x + 9y \geq 18 \\ y \leq 4 \end{cases}$

23. $\begin{cases} x + y \geq 1 \\ -x + 4y \geq -8 \\ x \leq 10 \end{cases}$

24. $\begin{cases} -3x + 9y \geq -27 \\ 4x + 3y \geq 12 \\ x \leq 6 \end{cases}$

25. $\begin{cases} 3x + 2y \leq 6 \\ 2x + 4y \leq 8 \\ x \geq 0 \\ y \geq 0 \end{cases}$

26. $\begin{cases} 4x + 3y \leq 12 \\ 2x + 6y \leq 12 \\ x \geq 0 \\ y \geq 0 \end{cases}$

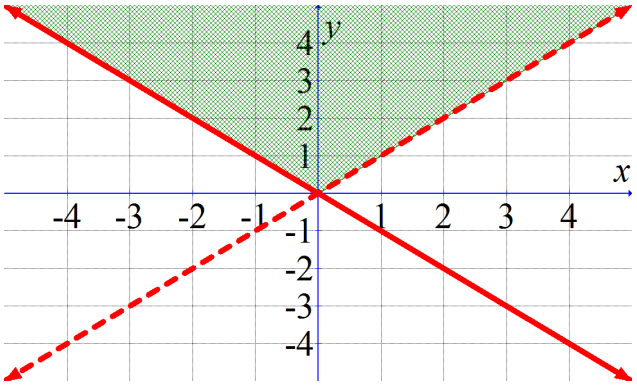
Exercise Set 1.4: Graphs of Linear Inequalities

27. $\begin{cases} 3x+4y \geq 12 \\ 4x+2y \geq 8 \\ x \geq 0 \\ y \geq 0 \end{cases}$

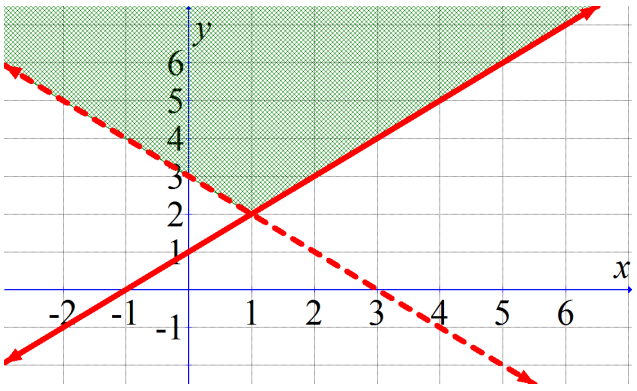
28. $\begin{cases} 3x+10y \geq 30 \\ 9x+5y \geq 45 \\ x \geq 0 \\ y \geq 0 \end{cases}$

For problems 29 – 34, give a system of linear inequalities that may represent the shaded region.

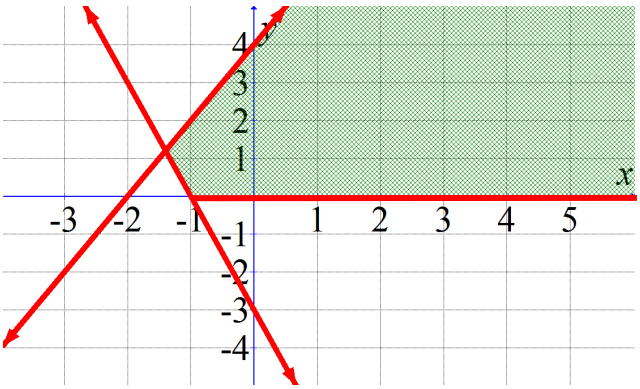
29.



30.



31.



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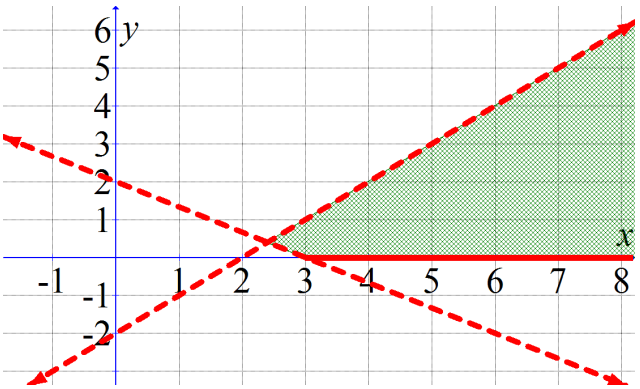
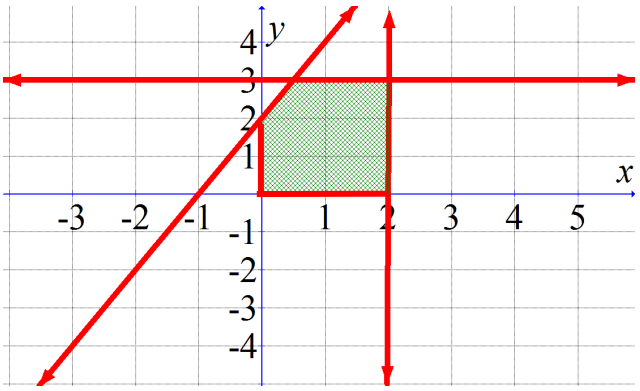


33.



34.