

Chapter 13 - Solving Systems of Equations

Solve each system by elimination.

1)
$$\begin{aligned} -6x + 20y &= 16 \\ x + 10y &= 24 \end{aligned}$$

2)
$$\begin{aligned} -9x - 12y &= -30 \\ -6x - 6y &= -6 \end{aligned}$$

3)
$$\begin{aligned} 12x + 2y &= -30 \\ 6x + 3y &= -9 \end{aligned}$$

4)
$$\begin{aligned} -3x - 8y &= 9 \\ -10x - 16y &= -2 \end{aligned}$$

5)
$$\begin{aligned} -60x - 70y &= 0 \\ 36x + 42y &= 0 \end{aligned}$$

6)
$$\begin{aligned} 2x + 6y &= 10 \\ 3x - 10y &= 15 \end{aligned}$$

7)
$$\begin{aligned} -7x - 10y &= -8 \\ 3x + 9y &= -6 \end{aligned}$$

8)
$$\begin{aligned} -7x + 21y &= -11 \\ -4x + 12y &= -4 \end{aligned}$$

9)
$$\begin{aligned} 63x + 81y &= -17 \\ -42x - 54y &= 18 \end{aligned}$$

10)
$$\begin{aligned} 9x - 2y &= -11 \\ 4x - 5y &= -9 \end{aligned}$$

Solve each system by substitution.

11)
$$\begin{aligned} y &= -4x - 11 \\ y &= -2x - 9 \end{aligned}$$

12)
$$\begin{aligned} y &= -2x - 8 \\ y &= 8x + 2 \end{aligned}$$

$$13) \begin{aligned} y &= -5x + 12 \\ -4x + 4y &= -24 \end{aligned}$$

$$14) \begin{aligned} y &= 7x + 1 \\ -6x - y &= -14 \end{aligned}$$

$$15) \begin{aligned} 3x + 2y &= -1 \\ x - 7y &= 15 \end{aligned}$$

$$16) \begin{aligned} -5x + 6y &= 19 \\ x - 5y &= 0 \end{aligned}$$

$$17) \begin{aligned} 8x + y &= 21 \\ -x - 5y &= 12 \end{aligned}$$

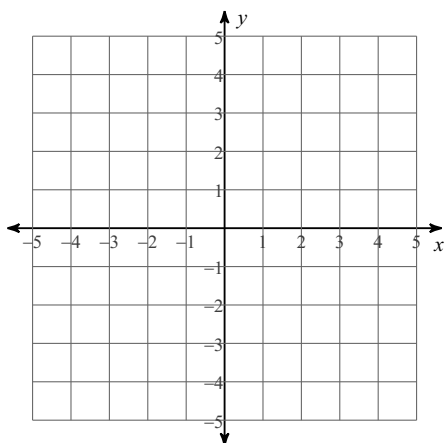
$$18) \begin{aligned} x + 4y &= -19 \\ -5x + 4y &= 23 \end{aligned}$$

$$19) \begin{aligned} -8x - 3y &= 0 \\ x + y &= -5 \end{aligned}$$

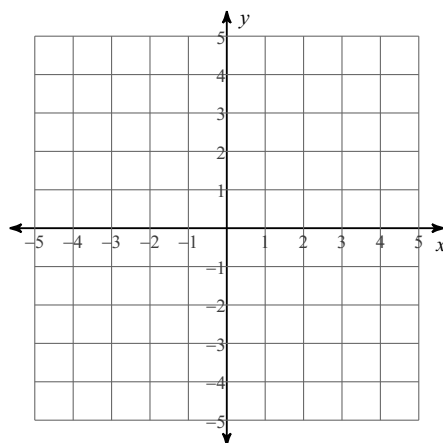
$$20) \begin{aligned} -2x - 2y &= 16 \\ x + 3y &= -24 \end{aligned}$$

Solve each system by graphing.

$$21) \begin{aligned} y &= \frac{1}{3}x + 4 \\ y &= -\frac{7}{3}x - 4 \end{aligned}$$

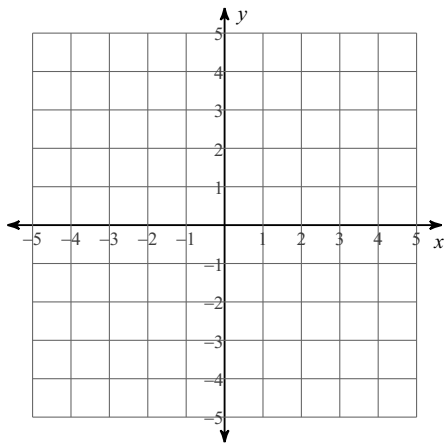


$$22) \begin{aligned} y &= \frac{1}{2}x - 1 \\ y &= -\frac{1}{2}x - 3 \end{aligned}$$



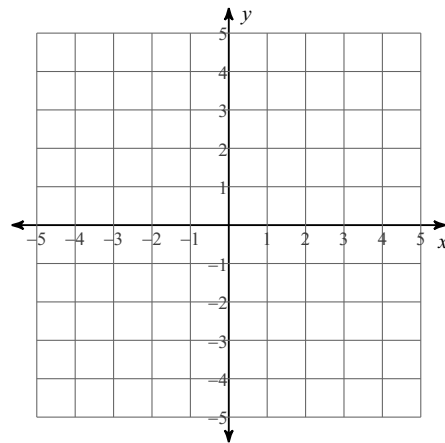
$$23) y = \frac{5}{2}x + 2$$

$$y = \frac{1}{2}x - 2$$



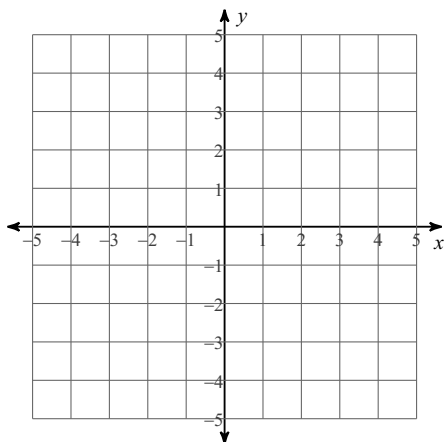
$$24) y = -\frac{5}{3}x + 1$$

$$y = -\frac{1}{3}x - 3$$



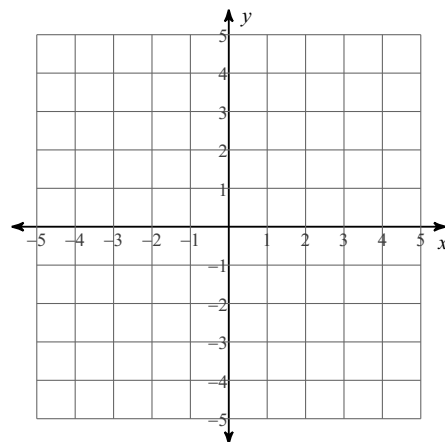
$$25) x + y = 3$$

$$4x - y = 2$$

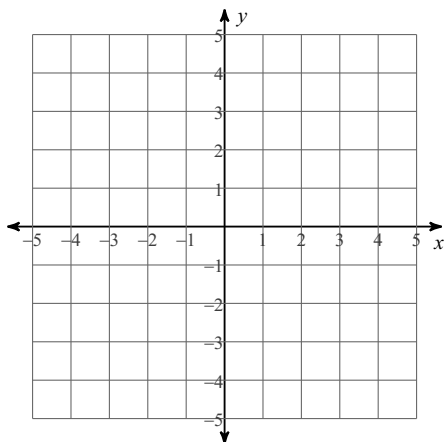


$$26) 6x + y = -2$$

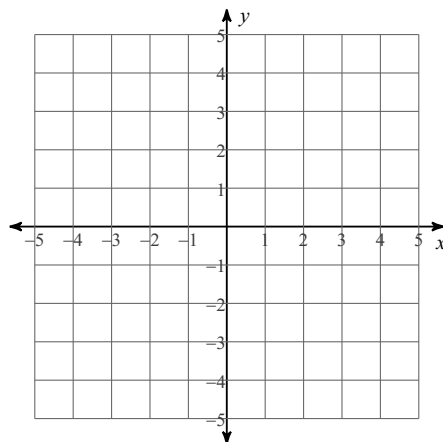
$$6x + y = 1$$



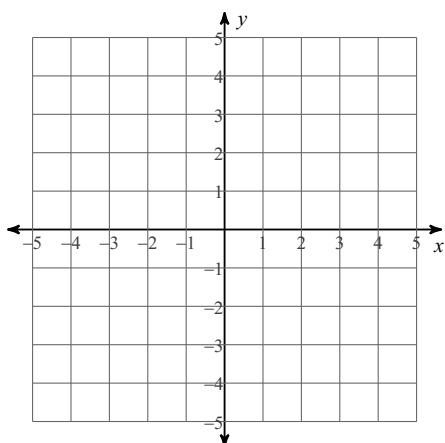
$$27) \begin{aligned} 5x - 4y &= -16 \\ x + 4y &= -8 \end{aligned}$$



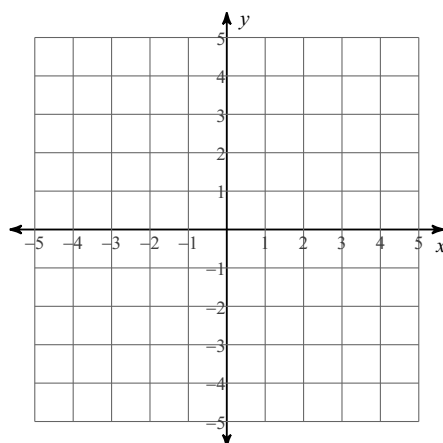
$$28) \begin{aligned} x + 4y &= -12 \\ 2x + y &= 4 \end{aligned}$$



$$29) \begin{aligned} 0 &= 2 + \frac{1}{2}y \\ 16x - 8 &= -2y \end{aligned}$$



$$30) \begin{aligned} 0 &= y - 2x - 2 \\ -3 - y &= -\frac{1}{3}x \end{aligned}$$



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1)
$$\begin{aligned} -6x + 20y &= 16 \\ x + 10y &= 24 \end{aligned}$$

 $(4, 2)$

2)
$$\begin{aligned} -9x - 12y &= -30 \\ -6x - 6y &= -6 \end{aligned}$$

 $(-6, 7)$

3)
$$\begin{aligned} 12x + 2y &= -30 \\ 6x + 3y &= -9 \end{aligned}$$

 $(-3, 3)$

4)
$$\begin{aligned} -3x - 8y &= 9 \\ -10x - 16y &= -2 \end{aligned}$$

 $(5, -3)$

5)
$$\begin{aligned} -60x - 70y &= 0 \\ 36x + 42y &= 0 \end{aligned}$$

Infinite number of solutions

6)
$$\begin{aligned} 2x + 6y &= 10 \\ 3x - 10y &= 15 \end{aligned}$$

 $(5, 0)$

7)
$$\begin{aligned} -7x - 10y &= -8 \\ 3x + 9y &= -6 \end{aligned}$$

 $(4, -2)$

8)
$$\begin{aligned} -7x + 21y &= -11 \\ -4x + 12y &= -4 \end{aligned}$$

No solution

9)
$$\begin{aligned} 63x + 81y &= -17 \\ -42x - 54y &= 18 \end{aligned}$$

No solution

10)
$$\begin{aligned} 9x - 2y &= -11 \\ 4x - 5y &= -9 \end{aligned}$$

 $(-1, 1)$ **Solve each system by substitution.**

11)
$$\begin{aligned} y &= -4x - 11 \\ y &= -2x - 9 \end{aligned}$$

 $(-1, -7)$

12)
$$\begin{aligned} y &= -2x - 8 \\ y &= 8x + 2 \end{aligned}$$

 $(-1, -6)$

$$13) \begin{cases} y = -5x + 12 \\ -4x + 4y = -24 \end{cases}$$

$(3, -3)$

$$14) \begin{cases} y = 7x + 1 \\ -6x - y = -14 \end{cases}$$

$(1, 8)$

$$15) \begin{cases} 3x + 2y = -1 \\ x - 7y = 15 \end{cases}$$

$(1, -2)$

$$16) \begin{cases} -5x + 6y = 19 \\ x - 5y = 0 \end{cases}$$

$(-5, -1)$

$$17) \begin{cases} 8x + y = 21 \\ -x - 5y = 12 \end{cases}$$

$(3, -3)$

$$18) \begin{cases} x + 4y = -19 \\ -5x + 4y = 23 \end{cases}$$

$(-7, -3)$

$$19) \begin{cases} -8x - 3y = 0 \\ x + y = -5 \end{cases}$$

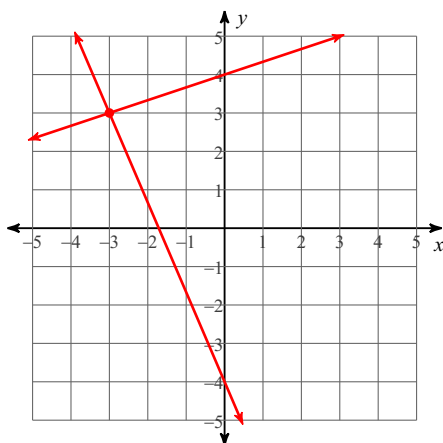
$(3, -8)$

$$20) \begin{cases} -2x - 2y = 16 \\ x + 3y = -24 \end{cases}$$

$(0, -8)$

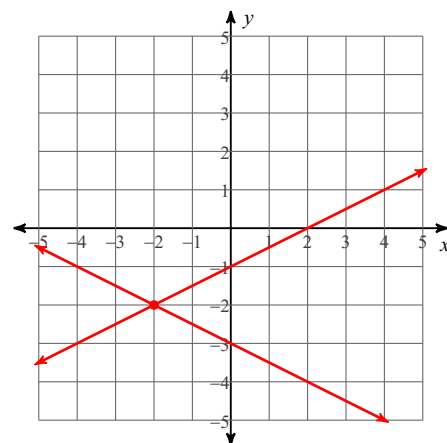
Solve each system by graphing.

$$21) \begin{cases} y = \frac{1}{3}x + 4 \\ y = -\frac{7}{3}x - 4 \end{cases}$$



$(-3, 3)$

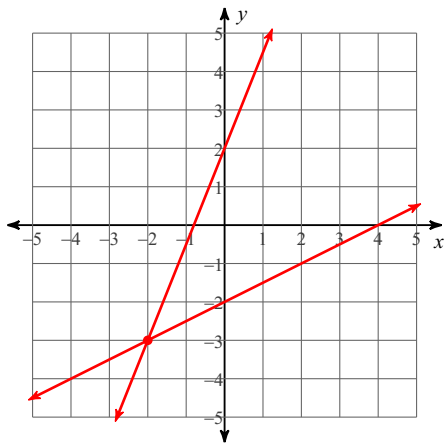
$$22) \begin{cases} y = \frac{1}{2}x - 1 \\ y = -\frac{1}{2}x - 3 \end{cases}$$



$(-2, -2)$

$$23) \ y = \frac{5}{2}x + 2$$

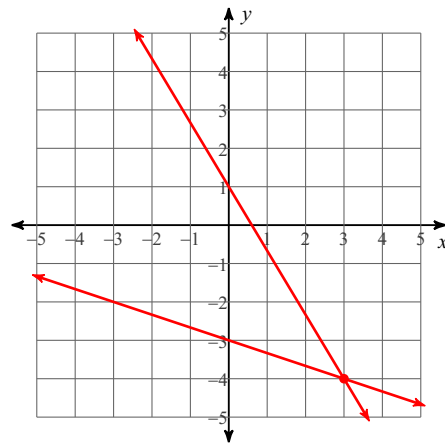
$$y = \frac{1}{2}x - 2$$



$(-2, -3)$

$$24) \ y = -\frac{5}{3}x + 1$$

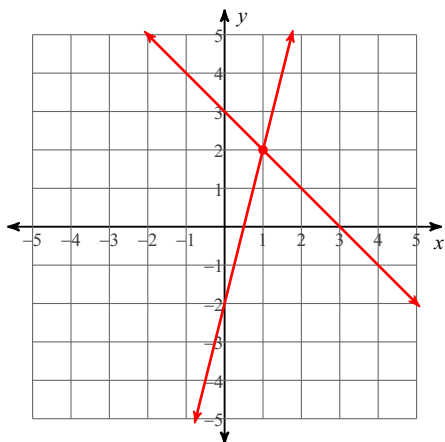
$$y = -\frac{1}{3}x - 3$$



$(3, -4)$

$$25) \ x + y = 3$$

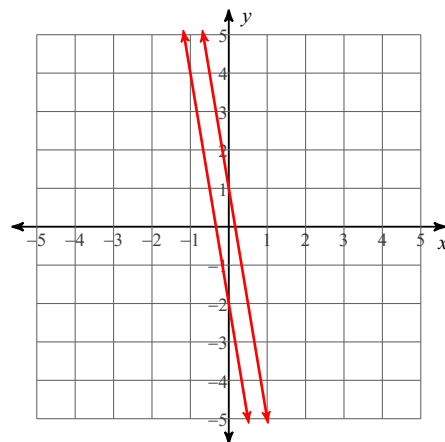
$$4x - y = 2$$



$(1, 2)$

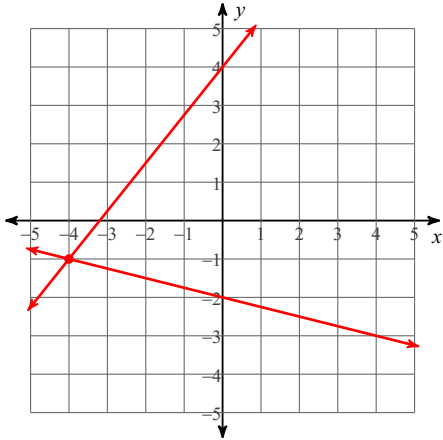
$$26) \ 6x + y = -2$$

$$6x + y = 1$$



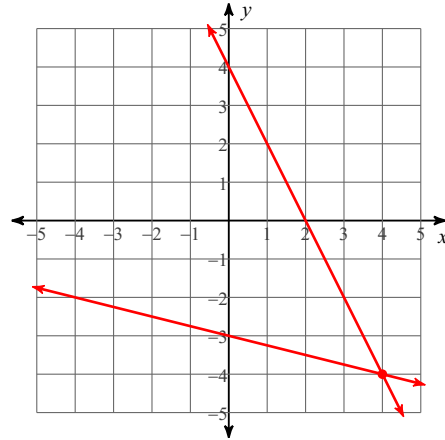
No solution

27) $5x - 4y = -16$
 $x + 4y = -8$



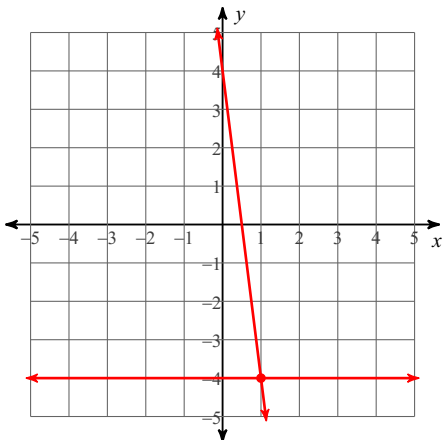
$(-4, -1)$

28) $x + 4y = -12$
 $2x + y = 4$



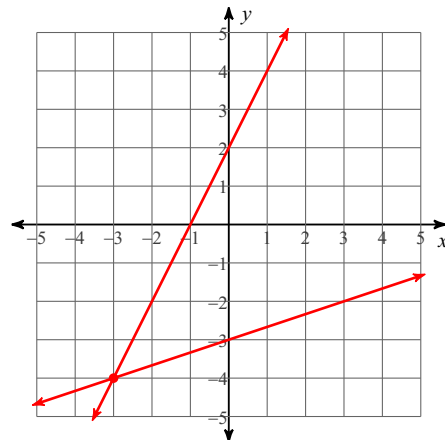
$(4, -4)$

29) $0 = 2 + \frac{1}{2}y$
 $16x - 8 = -2y$



$(1, -4)$

30) $0 = y - 2x - 2$
 $-3 - y = -\frac{1}{3}x$



$(-3, -4)$