

Unit 6 Day 12 Practice

$$1. \begin{cases} -3y = 2x - 6 \\ x + 4y = 8 \end{cases} \rightarrow \begin{cases} y = -\frac{2}{3}x + 2 \\ y = -\frac{1}{4}x + 2 \end{cases}$$

Solution: $(0, 2)$
Classification:
Independent

$$2. a) \begin{cases} 2x + 2y = 8 \\ y - x = 24 \end{cases} \rightarrow \begin{cases} y = -x + 4 \\ y = x + 24 \end{cases}$$

Solution: $(-10, 14)$
Classification:
Independent

$$b) \begin{cases} 3x + y = 13 \\ 2x - y = 2 \end{cases} \rightarrow \begin{cases} y = -3x + 13 \\ y = 2x - 2 \end{cases}$$

Solution: $(3, 4)$
Classification:
Independent

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

$$\begin{aligned} 2x + 3(7 - x) &= -1 \\ 2x + 21 - 3x &= -1 \\ -x + 21 &= -1 \\ \underline{-21 \quad -21} & \\ -x &= -22 \\ x &= 22 \end{aligned}$$

$$y = 7 - (22)$$

$$y = -15$$

Solution: $(22, -15)$
Classification:
Independent

$$3b) \begin{cases} 3y + x = 12 \\ -x - 2y = -7 \end{cases} \quad x = -3y + 12$$

$$-(-3y + 12) - 2y = -7$$

$$3y - 12 - 2y = -7$$

$$\begin{array}{r} y - 12 = -7 \\ +12 \quad +12 \\ \hline \end{array}$$

$$y = 5$$

$$x = -3(5) + 12$$

$$x = -15 + 12$$

$$x = -3$$

Solution: $(-3, 5)$

Classification:

Independent

$$4. a) \begin{cases} 2x + 3y = -6 \\ -5x - 9y = 14 \end{cases} \rightarrow \begin{array}{r} 6x + 9y = -18 \\ -5x - 9y = 14 \\ \hline \end{array}$$

$$x = -4$$

$$2(-4) + 3y = -6$$

$$\begin{array}{r} -8 + 3y = -6 \\ +8 \quad +8 \\ \hline \end{array}$$

$$3y = 2$$

$$y = \frac{2}{3}$$

Solution: $(-4, \frac{2}{3})$

Classification:

Independent

$$4. b) \begin{cases} (x + 2y = 3) \cdot (-5) \\ 5x - 3y = 2 \end{cases} \rightarrow \begin{array}{r} -5x - 10y = -15 \\ \underline{5x - 3y = 2} \\ +13y = -13 \\ \hline -13 \quad -13 \end{array}$$

$$x + 2(1) = 3$$

$$\begin{array}{r} x + 2 = 3 \\ \underline{-2 \quad -2} \end{array}$$

$$x = 1$$

$$y = 1$$

Solution: (1, 1)
Classification:
Independent

$$5. a) \begin{cases} 3x - 6y = -12 \\ (x - 2y = 4) \cdot (-3) \end{cases} \rightarrow \begin{array}{r} 3x - 6y = -12 \\ \underline{-3x + 6y = -12} \end{array}$$

$$0 = -24$$

NOT TRUE!

Solution:
No solution
Classification:
Inconsistent

$$b) \begin{cases} y + 5 = 4x \\ 6x + 4y = -9 \end{cases} \rightarrow y = 4x - 5$$

Solution: $(\frac{1}{2}, -3)$
Classification:
Independent

$$6x + 4(4x - 5) = -9$$

$$6x + 16x - 20 = -9$$

$$22x - 20 = -9$$

$$22x = 11$$

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

$$y = 4(\frac{1}{2}) - 5$$

$$y = 2 - 5$$

$$y = -3$$