

Homework review: Section 7.4

$$\textcircled{22} \quad 4x - 5y = 18$$

$$5(3x - y = 11)$$

$$15x + 5y = 55$$

$$-4x + 5y = 18$$

$$\begin{array}{r} 11x \quad = 37 \\ \hline 11 \quad 11 \\ x = \frac{37}{11} \end{array}$$

$$\left(\frac{37}{11}, -\frac{10}{11} \right)$$

$$3x = y + 11$$

$$\begin{array}{r} -y \quad -y \\ 3x - y = 11 \end{array}$$

$$3\left(\frac{37}{11}\right) = y + 11$$

$$\frac{111}{11} = y + 11$$

$$\begin{array}{r} -11 \quad -11 \end{array}$$

$$y = \frac{111}{11} - \frac{11 \cdot 11}{1 \cdot 11}$$

$$= \frac{111}{11} - \frac{121}{11}$$

$$y = -\frac{10}{11}$$

(37)

Hardcover: \$4 each

Paperback: \$2 each

total: \$26, 8 books

 x : # hardcover = 5 books y : # paperbacks

$$4x + 2y = 26$$

$$-2x + 2y = 16$$

$$\frac{2x}{2} = \frac{10}{2}$$

$$x = 5$$

$$\textcircled{10} \begin{cases} (-2x + 5y = 9) \cdot 3 \\ (3x + 11y = 4) \cdot 2 \end{cases}$$

$$-6x + 15y = 27$$

$$6x + 22y = 8$$

$$(-17, 5)$$

$$\begin{array}{r} 7y = 35 \\ \hline 7 \quad 7 \end{array}$$

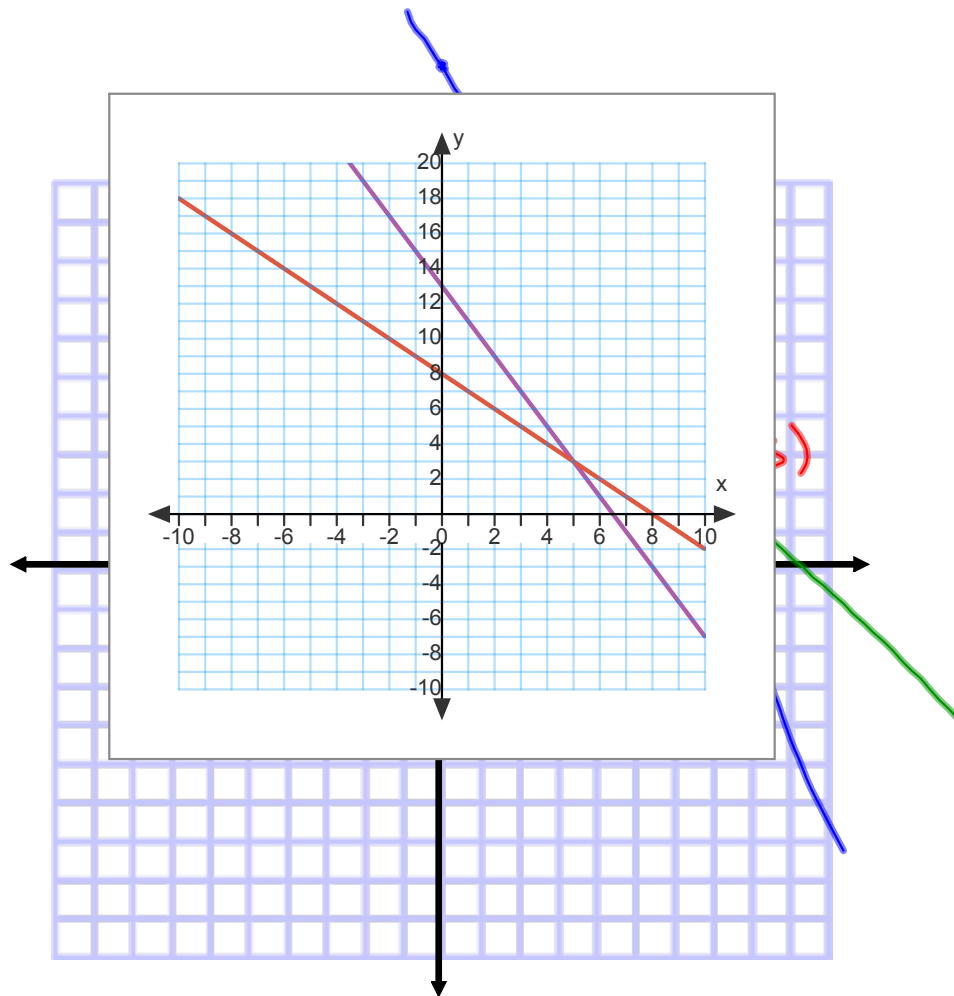
$$y = 5$$

$$3x + 11(5) = 4$$

$$3x + 55 = 4$$

$$\frac{3x}{3} = \frac{-51}{3}$$

$$x = -17$$



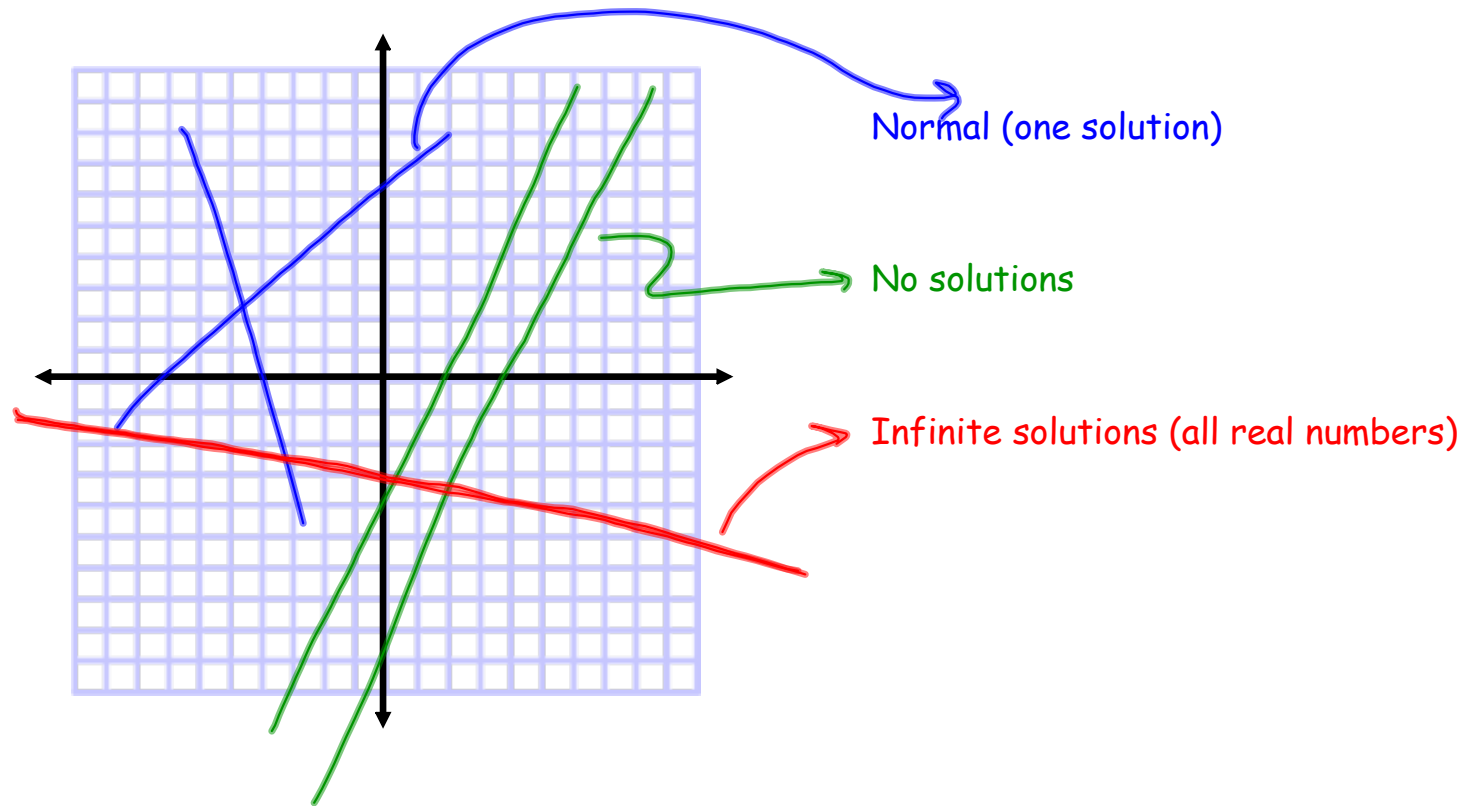
$$\frac{2y}{2} = \frac{-4x + 26}{2}$$

$$y = (-2)x + 13$$

$$y = (-x) + 8$$



Special types of linear systems:



How to identify the type of linear system:

✓ Graph (previous page)

$$\begin{cases} y = 2x - 4 \\ y = -5x - 4 \end{cases} \quad \begin{cases} y = 4x - 1 \\ y = 4x + 2 \end{cases} \quad \begin{cases} y = 2x - 1 \\ y = 2x - 1 \end{cases}$$

$$2x - 4y = \sim \quad 6x + 2y = \sim$$

$$\begin{aligned} x &= 2 \\ y &= 4 \end{aligned}$$

$$4 = 4 \quad -2 = 6$$

Solve for y and predict:

m's different — one solution

m's the same, b's not — no solution

m's the same, b's the same — all real #'s

Use substitution or elimination and interpret

x and y values — one solution

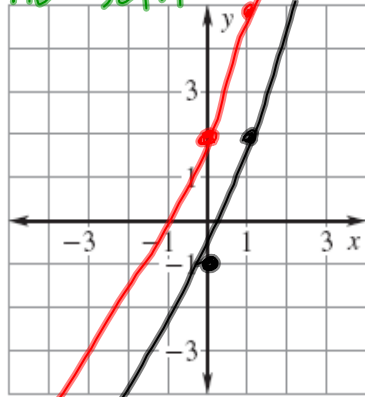
a = b — all real #'s

a <> b — no solution

4. $-6x + 2y = -2$

$-3x + y = 2$

no sol'n



graph

$$\begin{array}{r} -6x + 2y = -2 \\ +6x \quad +6x \\ \hline 2y = 6x - 2 \\ \hline y = 3x - 1 \end{array}$$

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

5. $2y - x = -4$ ^{one solution}

$2x + y = 3$

$y = mx + b$

$$\begin{array}{r} 2y - x = -4 \\ +x \quad +x \\ \hline 2y = x - 4 \end{array}$$

$$\frac{2y}{2} = \frac{x - 4}{2}$$

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

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

$y = -2x + 3$

6. $4x - y = 2$ ^{one solution}

$-x + 3y = 9$

substitution/elimination

$$\begin{array}{r} -x + 3y = 9 \\ -3y \quad -3y \\ \hline -x = -3y + 9 \end{array}$$

$$\frac{-x}{-1} = \frac{-3y + 9}{-1}$$

$x = 3y - 9$

$4(3y - 9) - y = 2$

$12y - 36 - y = 2$

$11y = 38$

$y = \frac{38}{11}$

Use substitution...

26. Comedy Tickets The table below shows the ticket sales at an all-ages comedy club on a Friday night and a Saturday night.

Day	Number of adult tickets	Number of student tickets	Total sales (dollars)
Friday	30	20	910
Saturday	45	30	1365

- a.** Let x represent the cost (in dollars) of one adult ticket and let y represent the cost (in dollars) of one student ticket. Write a linear system that models the situation.
- b.** Solve the linear system.

$$\begin{aligned} \mathbf{16.} \quad & -6x + 6y = -4 \\ & 2x - 2y = 5 \end{aligned}$$

$$\begin{aligned} \mathbf{17.} \quad & y + 2x = \frac{8}{3} \\ & 2x + y = -10 \end{aligned}$$

$$\begin{aligned} \mathbf{18.} \quad & 4x + 3y = 9 \\ & \frac{3}{4}x + y = 3 \end{aligned}$$

- 20. Lift Tickets** Two families go skiing on a Saturday. One family purchases two adult lift tickets and four youth lift tickets for \$166. Another family purchases four adult lift tickets and five youth lift tickets for \$263. Let x represent the cost in dollars of one adult lift ticket and let y represent the cost in dollars of one youth lift ticket.
- a.** Write a linear system that represents this situation.
 - b.** Solve the linear system to find the cost of one adult and one youth lift ticket.
 - c.** How much would it cost two adults and five youths to ski for a day?

- 22. Getting to School** You walk 1.75 miles to school at an average speed r (in miles per hour). On the way back home, you are walking with a friend and your average speed is $\frac{3}{4}r$. The round trip took a total of 90 minutes. Find the average speed for each leg of your trip.

- 17. Painting and Cleaning** During the spring and summer, you do a spring yard cleanup for households and you also paint houses. You earn \$8 an hour doing the cleanups and \$12 an hour painting. Last spring and summer, you worked a total of 400 hours and earned \$3800. How many hours did you spend doing yard cleanups? How many hours did you spend painting?

Homework:
p. 462, 3-36 (every 3rd), 37