

Chapter 7 Review HW (updated 2017)

CH7 Review HW
page 475
#s 5-23 (odd)
WP's #s 11 and 24
#s 25-30

7 CHAPTER REVIEW

Chapter Review 475

7.1 Solve Linear Systems by Graphing pp. 427-433

EXERCISES

Solve the linear system by graphing. Check your solution.

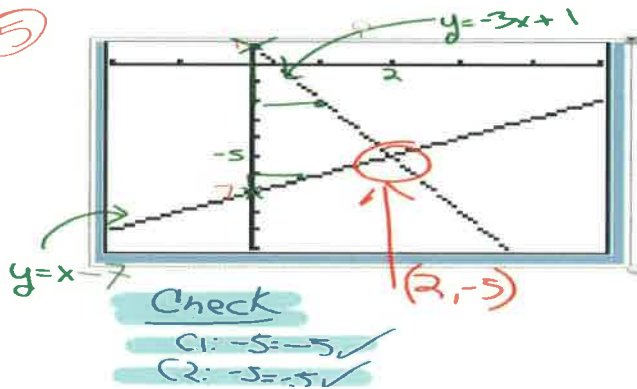
5. $y = -3x + 1$
 $y = x - 7$

7. $x + y = 4$
 $x - y = 5$

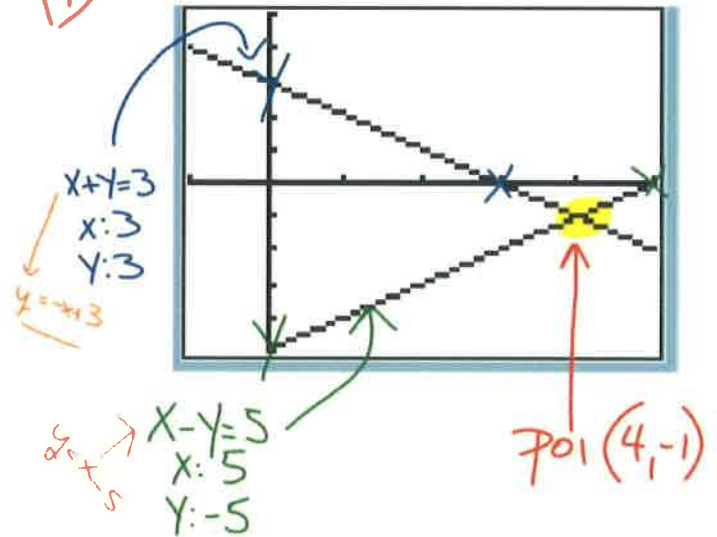
$(2, -5)$

$(4, -1)$

5



7



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7.2 Solve Linear Systems by Substitution

EXERCISES

Solve the linear system using substitution.

$$\begin{array}{r} 9. \ x = 4y - 9 \\ \quad x - y = 4 \\ \quad \quad \quad +y \quad +4 \\ \hline \end{array}$$

① Isolate x
 $\rightarrow x = y + 4$

③ FIND X
 $x = 1 + 4$
 $x = 5$

② substitute

$$\begin{array}{r} (y+4) + 4y = 9 \\ 5y + 4 = 9 \\ \quad \quad \quad -4 \quad -4 \\ \hline \end{array}$$

$$\frac{5y}{5} = \frac{5}{5} \quad (y=1)$$

④ Check in orig EQ

$$C: 5 + 4(1) = 9 \\ 9 = 9 \checkmark$$

$$C: 5 - 1 = 4 \\ 4 = 4 \checkmark$$

11. **ART** Kara spends \$16 on tubes of paint and disposable brushes for an art project. Each tube of paint costs \$3, and each disposable brush costs \$.50. Kara purchases twice as many brushes as tubes of paint. Find the number of brushes and the number of tubes of paint that she purchases.

KI: • paint \$3 • Spent \$16
• brush \$.50 • bought twice as many brushes

$x = \#$ paints

$y = \#$ brushes

EQ's: $3x + .50y = 16$

$$2x = y$$

Solve (substitution is the easiest method)

$$3x + .50(2x) = 16$$

$$4x = 16$$

$$x = 4$$

FIND Y: $y = 2x = 2(4)$

$$y = 8$$

Kara bought 4 paints and 8 brushes

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7.3 Solve Linear Systems by Adding or Subtracting

EXERCISES

Solve the linear system using elimination.

13.
$$\begin{array}{r} 4x - 5y = 14 \\ -4x + y = -6 \end{array}$$

①
+

$$\begin{array}{r} 4x - 5y = 14 \\ -4x + y = -6 \\ \hline -4y = 8 \\ \frac{-4y}{-4} = \frac{8}{-4} \\ y = -2 \end{array}$$

② FIND X:

$$\begin{array}{r} 4x - 5(-2) = 14 \\ 4x + 10 = 14 \\ \frac{-10}{-10} \quad \frac{-10}{-10} \\ \hline 4x = 4 \\ \frac{4x}{4} = \frac{4}{4} \quad X = 1 \end{array}$$

③ Check: $c: 4(1) - 5(-2) = 14$
 $14 = 14 \checkmark$
 $c: -4(1) + (-2) = -6$
 $-6 = -6 \checkmark$

15.
$$\begin{array}{r} 9x - 2y = 34 \\ -1(5x - 2y - 10) \end{array} \rightarrow \begin{array}{r} 9x - 2y = 34 \\ -5x + 2y = 10 \end{array}$$

$$\begin{array}{r} 9x - 2y = 34 \\ -5x + 2y = 10 \\ \hline 4x = 24 \\ \frac{4x}{4} = \frac{24}{4} \\ x = 6 \end{array}$$

FIND Y:

$$\begin{array}{r} 9(6) - 2y = 34 \\ -54 - 2y = 34 \\ \frac{-54}{-2} \quad \frac{-54}{-2} \\ \hline -2y = -20 \\ \frac{-2y}{-2} = \frac{-20}{-2} \\ y = 10 \end{array}$$

$c: 9(6) - 2(10) = 34$
 $34 = 34 \checkmark$
 $c: 5(6) - 2(10) = 10$
 $10 = 10 \checkmark$

17.
$$\begin{array}{r} 4y = 11 - 3x \\ 3x + 2y = -5 \end{array}$$

↓ ① PUT IN STANDARD FORM

②
$$\begin{array}{r} 3x + 4y = 11 \\ -1(3x + 2y = -5) \end{array} \rightarrow \begin{array}{r} 3x + 4y = 11 \\ -3x - 2y = 5 \end{array}$$

$$\begin{array}{r} 3x + 4y = 11 \\ -3x - 2y = 5 \\ \hline 2y = 16 \\ \frac{2y}{2} = \frac{16}{2} \quad y = 8 \end{array}$$

③ FIND X:

$$\begin{array}{r} 3x + 2(8) = -5 \\ -16 \quad -16 \\ \hline 3x = -21 \\ \frac{3x}{3} = \frac{-21}{3} \quad X = -7 \end{array}$$

④ Check: $c: 4(8) = 11 - 3(-7)$
 $32 = 32 \checkmark$

$c: 3(-7) + 2(8) = -5$
 $-5 = -5$

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7.4 Solve Linear Systems by Multiplying First

EXERCISES

Solve the linear system using elimination.

19. $\begin{cases} x + 6y = 28 \\ 2x - 3y = -19 \end{cases}$

$$\begin{array}{r} (x + 6y = 28) \times -2 \rightarrow -2x - 12y = -56 \\ 2x - 3y = -19 \\ \hline -15y = -75 \\ \frac{-15y}{-15} = \frac{-75}{-15} \end{array}$$

$y = 5$

21. $\begin{cases} 8x - 7y = -3 \\ 6x - 5y = -1 \end{cases}$

$$\begin{array}{r} (8x - 7y = -3) \times 6 \rightarrow 48x - 42y = -18 \\ (6x - 5y = -1) \times -8 \rightarrow -48x + 40y = 8 \\ \hline -2y = -10 \\ \frac{-2y}{-2} = \frac{-10}{-2} \end{array}$$

$y = 5$

FIND X:

$$\begin{array}{r} 8x - 7(5) = -3 \\ 8x - 35 = -3 \\ + 35 \quad + 35 \\ \hline 8x = 32 \\ \frac{8x}{8} = \frac{32}{8} \end{array}$$

$x = 4$

23. $\begin{cases} 11x = 2y - 1 \\ 3y = 10 + 8x \end{cases}$

↓ PUT IN STD FORM

$$\begin{array}{r} 8(11x - 2y = -1) \rightarrow 88x - 16y = -8 \\ 11(-8x + 3y = 10) \rightarrow -88x + 33y = 110 \\ \hline 17y = 102 \\ \frac{17y}{17} = \frac{102}{17} \end{array}$$

$y = 6$

FIND X:

$$\begin{array}{r} x + 6(5) = 28 \\ x + 30 = 28 \\ -30 \quad -30 \\ \hline x = -2 \end{array}$$

$x = -2$

C: $-2 + 6(5) = 28$
 $28 = 28 \checkmark$

C: $8(4) - 7(5) = -3$
 $-3 = -3 \checkmark$

C: $2(-2) - 3(5) = -19$
 $-19 = -19 \checkmark$

C: $6(4) - 5(5) = -1$
 $-1 = -1 \checkmark$

FIND X:

$$\begin{array}{r} 11x = 2(6) - 1 \\ 11x = 11 \\ \frac{11x}{11} = \frac{11}{11} \end{array}$$

$x = 1$

C: $11(1) = 2(6) - 1$
 $11 = 11 \checkmark$

C: $3(6) = 10 + 8(1)$
 $18 = 18 \checkmark$

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24. **CAR MAINTENANCE** You pay \$24.50 for 10 gallons of gasoline and 1 quart of oil at a gas station. Your friend pays \$22 for 8 gallons of the same gasoline and 2 quarts of the same oil. Find the cost of 1 quart of oil.

KI: You PAY \$24.50 10 gal gas 1 qt oil
FRIEND PAYS \$22 8 gal gas 2 qt oil

$x = \text{Cost of gas } (\$/\text{gal})$
 $y = \text{Cost of oil } (\$/\text{qt})$

EQ's: $(10x + 1y = \$24.50) \times -2 \rightarrow -20x - 2y = -49$ \downarrow
 $8x + 2y = \$22 \rightarrow 8x + 2y = 22$

$$\begin{array}{r} -20x - 2y = -49 \\ \underline{8x + 2y = 22} \\ -12x = -27 \\ \underline{-12x = -27} \\ -12 = -12 \end{array}$$

FIND Y:

$$8(2.25) + 2y = 22$$

$$\begin{array}{r} 18 + 2y = 22 \\ \underline{-18} \quad \underline{-18} \\ 2y = 4 \end{array}$$

$$\frac{2y}{2} = \frac{4}{2} \quad \boxed{y = \$2}$$

Cost of gas is \$2.25/GAL
and oil is \$2/QT

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7.5 Solve Special Types of Linear Systems

EXERCISES

Tell whether the linear system has one solution, no solution, or infinitely many solutions. Explain.

25. $x - 2y = 3$
 $1.5x - 3y = 0$

\leftarrow

$$1.5(2y - 3) - 3y = 0$$
$$3y - 4.5 - 3y = 0$$
$$-4.5 \neq 0$$

25) **NO SOLUTION**

26. $x + y = 8$
 $x + 8 = y$

$$\begin{array}{r} \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\ -x + y = 8 \\ x - y = -8 \\ \hline 0 = 0 \end{array}$$

INFINITE SOLUTIONS

27. $4x - 2y = 6$
 $4x - 2y = 10$

$(x-1)$

$$\begin{array}{r} 4x - 2y = 6 \\ -4x - 2y = -10 \\ \hline 0 \neq -4 \end{array}$$

NO SOLUTION

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7.6 Solve Systems of Linear Inequalities

pp. 466-472

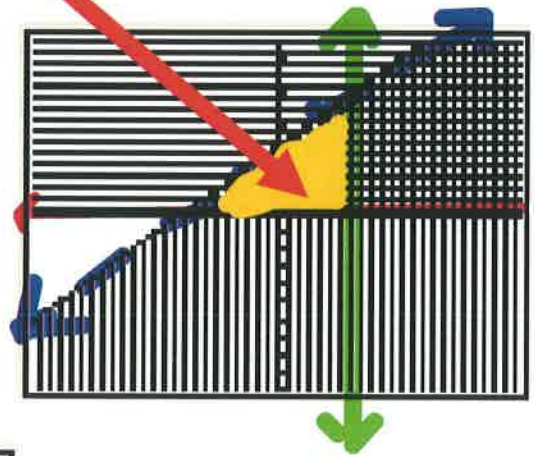
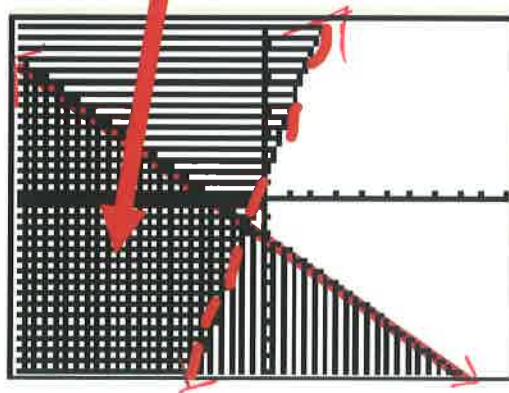
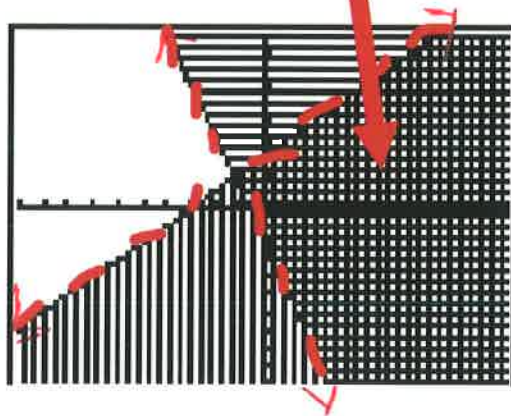
EXERCISES

Graph the system of linear inequalities.

28. $y < x + 3$
 $y > -3x - 2$

29. $y \leq -x - 2$
 $y > 4x + 1$

30. $y \geq 0$ ●
 $x \leq 2$ ●
 $y < x + 4$ ●



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REVIEW SYSTEMS

① GRAPHING - Solution is POT.

② SUBSTITUTION - USE WHEN IT IS EASY TO
ISOLATE 1 VARIABLE. Ex: $x = y + 1$
 $2x + 4y = 10$] Substitute
INTO OTHER
EQ

③ ELIMINATION

$$2(y+1) + 4y = 10$$

④ ADDITION - 1 VAR HAS OPPOSITE COEF Ex: $\begin{cases} 2x + y = 10 \\ 2x - 4y = 10 \end{cases}$

⑤ SUBTRACTION - 1 VAR HAS SAME COEF $\begin{cases} 2x + y = 10 \\ 2x - 5y = 1 \end{cases} \rightarrow \begin{cases} 2x + y = 10 \\ -2x + 5y = -1 \end{cases}$

⑥ MULT. - MULT 1 OR BOTH EQ'S
SO THAT 1 VARIABLE HAS OPPOSITE COEFF'S.

Additional Practice Problems

Classwork: CH7 Review WP page 479 #28 and page 475 #'s 6, 8, 10, 14, 20, 22

WP pg 479 #28 PRACTICE WP

① KE

<u>CARRIE</u>	<u>DAVE</u>
150 miles	120 miles
\$215	\$176

① DEFINE VAR

X = TRUCK \$ RENTAL
Y = \$ PER MILE

③ SYSTEM EQ

$$C: X + 150Y = 215$$

$$D: X + 120Y = 176$$

② SOLVE

$$\begin{array}{r} X + 150Y = 215 \\ -X - 120Y = -176 \\ \hline \end{array}$$

$$\frac{30Y}{30} = \frac{39}{30}$$

$$Y = 1.3$$

$$\begin{array}{l} X + 150(1.3) = \\ \hline X = 20 \end{array}$$

② ANSWER

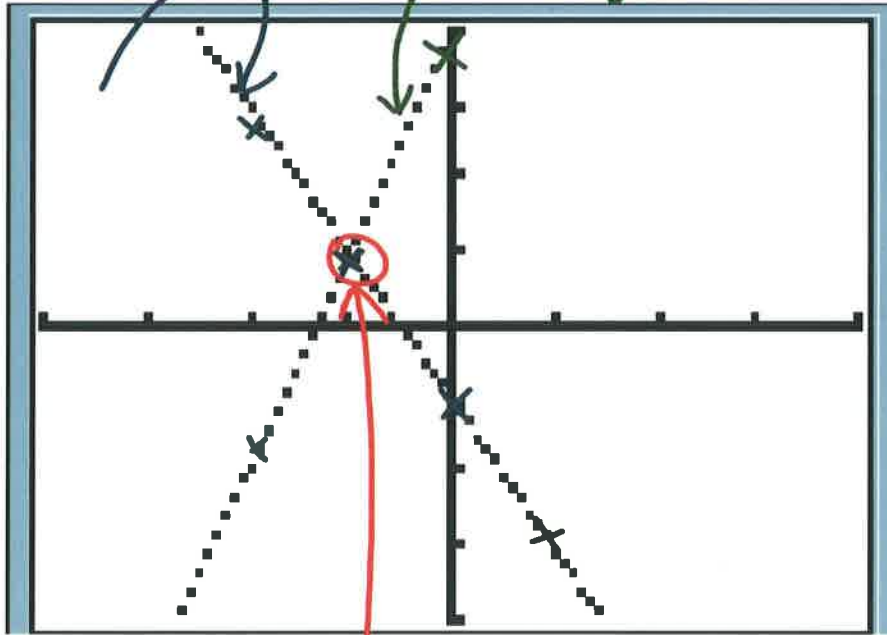
\$20 FOR THE TRUCK
AND \$1.30 PER MILE

Additional Practice Problems

⑥

$$y = -2x - 1$$

$$y = 3x + 4$$



POINT $(-1, 1)$

C1: $I = IV$
C2: $I = IV$

Additional Practice Problems

7.2 Solve Linear Systems by Substitution

EXERCISES

Solve the linear system using substitution.

$$\begin{cases} R: y = 2x - 7 \\ x + 2y = 1 \end{cases}$$

$$\begin{aligned} x + 2(2x - 7) &= 1 \\ x + 4x - 14 &= 1 \\ 5x &= 15 \\ x &= 3 \\ y &= 2(3) - 7 \\ y &= -1 \end{aligned}$$

$$\begin{cases} T: 2x + y = -15 \\ y = 5x - 6 \end{cases}$$

$$\begin{aligned} 2x + (5x - 6) &= -15 \\ 7x - 6 &= -15 \\ 7x &= -21 \\ x &= -3 \\ y &= 5(-3) - 6 \\ y &= -9 \end{aligned}$$

Additional Practice Problems

14. $\begin{cases} x + 7y = 12 \\ 2x + 7y = 18 \end{cases} \xrightarrow{x-1} \begin{cases} x + 7y = 12 \\ 2x - 7y = -18 \end{cases} \downarrow$

$$\begin{array}{r} x + 7y = 12 \\ 2x - 7y = -18 \\ \hline 3x = -6 \\ x = -2 \\ y = 2 \end{array}$$

22. $\begin{cases} 5x - 3y = 2 \\ 3x + 2y = 11 \end{cases}$

$$\begin{cases} 5x - 3y = 2 \\ 3x + 2y = 11 \end{cases}$$

20. $\begin{cases} 3x - 5y = 7 \\ -4x - 7y = 8 \end{cases} \xrightarrow{\begin{matrix} \times 4 \\ \times 3 \end{matrix}} \begin{cases} 12x - 20y = -28 \\ -12x + 21y = 24 \end{cases} \downarrow$

$$\begin{array}{r} 12x - 20y = -28 \\ -12x + 21y = 24 \\ \hline y = -4 \\ 3x - 5(-4) = -7 \\ 3x - 20 = -20 \\ 3x = -27 \\ x = -9 \end{array}$$

$(-9, -4)$