



Solve by graphing:

$$3x + 2y \geq -2$$
$$x + 2y \leq 2$$

Pull tab to reveal answer

Sep 24-11:06 AM

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Solve the System. Write your answer as an ordered triple.

$$x - y + 2z = 7$$
$$2x + y + z = 8$$
$$x - z = 5$$

(5, -2, 0)

Pull tab to reveal answer

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Solve the word problem by setting up a system, and solve by using substitution or elimination. Define your variables.

Tickets for your school's play are \$3 for students and \$5 for non-students. On opening night 937 tickets are sold and \$3943 is collected. How many tickets were sold to students? to non-student?

371 students  
566 non-students

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Name all the vertices. Then find the maximum value of the given objective function.

Maximize for  $P = 2x + 3y$

max of 30  
at (0, 10)

Vertices  
(0, 10)  
(0, 0)  
(2, 0)  
(3, 5)

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You are going to make and sell Irish soda bread and Kugelhopf cake. A loaf of Irish soda bread is made with 2 c flour and 1 c sugar. Kugelhopf cake is made with 4 c flour and 1 c sugar. You have 16 c flour and 3 c sugar. You will make a profit of \$1.50 on each loaf of Irish soda bread and a profit of \$4 on each Kugelhopf cake.

	bread	cake	Total/Limits	Inequality
# of what to being produced?	x	y		
Limitation # 1	2	4	16	$2x + 4x \leq 16$
Limitation # 2	1	1	3	$x + y \leq 3$
Objective Function	1.50	4		

$P = 1.50x + 4y$

How many of each kind of bread should you make to maximize the profit?  
What is the maximum profit?

(0, 0) (0, 3) (3, 0)  
Max profit of \$12 when you make 3 cakes and 0 bread.

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HW - REVIEW Ch. 3  
p. 121 #10  
p. 163 #28, 29, 43-45  
p. 138 #1-10 (skip 7)

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For Exercises 10–11, use your graphing calculator. Find linear models for each set of data. Use each model to predict the year in which the quantities will be equal.

10. Annual U.S. Consumption of Vegetables

Year	Broccoli (pounds)	Cucumbers (pounds)
1970	1.5	3.9
1975	2.6	4.4
1980	3.4	4.7
1985	4.3	5.6
1990	5.1	6.5
1995	6.5	6.8
2000	6.1	6.4

- constant

Source: Statistical Abstracts of the United States. Go to [www.FREDbook.com](http://www.FREDbook.com) for a data update. Web Code: app 9941

11. U.S. Life Expectancy at Birth

Year	Men (years)	Women (years)
1970	67.1	74.7
1975	68.8	76.6
1980	70.0	77.4
1985	71.1	78.2
1990	71.8	78.8
1995	72.5	78.9
2000	74.3	79.7

Source: U.S. Census Bureau. Go to [www.FREDbook.com](http://www.FREDbook.com) for a data update. Web Code: app 9941

Answer:

10. Use 0 for 1980.

$$\begin{cases} y = 0.232x + 1.328 \\ y = 0.145x + 3.673 \end{cases}$$

about 2007

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Page 163: All answers are in the back of the textbook

Graph each system of constraints. Find all vertices. Then find the variable values that maximize or minimize the objective function.

27.  $\begin{cases} x \leq 8 \\ y \leq 5 \\ x \geq 0, y \geq 0 \end{cases}$

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

29.  $\begin{cases} 3x + 2y \leq 12 \\ x + y \leq 5 \\ x \geq 0, y \geq 0 \end{cases}$

Minimum for  $C = x + 5y$

Minimum for  $C = 4x + y$

Maximum for  $P = 3x + 5y$

Solve each system.

43.  $\begin{cases} x + y + z = 10 \\ 2x - y + z = 2 \\ -x + 2y - z = 5 \end{cases}$

44.  $\begin{cases} x + 2y + z = 14 \\ y = z + 1 \\ x = -3z + 6 \end{cases}$

45.  $\begin{cases} 3x + y - 2z = 22 \\ x + 5y + z = 4 \\ x = -3z \end{cases}$

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Checkpoint Quiz: p. 138

Solve each system of equations.

1.  $\begin{cases} 3x + 2y = 6 \\ x - 2y = 10 \end{cases}$

2.  $\begin{cases} 4x + 7y = 28 \\ y = 2x - 14 \end{cases}$

3.  $\begin{cases} 4x + 5y = -12 \\ 3x - 4y = 22 \end{cases}$

4.  $\begin{cases} 3y - 2x = 7 \\ 2y - 2 = 4x \end{cases}$

5. The Village Inn offers two special packages. For two nights and three meals the cost is \$158. For two nights and five meals the cost is \$181. Write and solve a system of linear equations to find the costs per night and per meal.

6. **Smart Shopping** An ordinary refrigerator costs \$489 and has an estimated annual operating cost of \$84. An energy-saving model costs \$599, with an estimated annual cost of \$61. After how many years will the costs to buy and to operate the two models be equal?

7. Each week you must do a minimum of 18 hours of homework. Participation in sports requires at least 12 hours per week. You have no more than 35 hours per week in total to devote to these activities.

a. Write a system of inequalities to model the situation.  
b. Graph and solve the system.

Solve each system of inequalities by graphing.

8.  $\begin{cases} y \geq -2 \\ y > |x + 1| \end{cases}$

9.  $\begin{cases} 8x + 2y > 5 \\ x + 2y \leq -3 \end{cases}$

10.  $\begin{cases} 4y < 3x - 1 \\ y > 2|x| - 3 \end{cases}$

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