Algebra II Chapter 3 Test Review

Show ALL work on separate paper. You should ONLY use a calculator for problems #10 and #16.
Reviews are due on test day - NO LATE REVIEWS ACCEPTED!

Solve the system by graphing *(example 1, p.121)*

1. $\begin{cases} -x - 3y = 3 \\ 3x - y = -9 \end{cases}$

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

Without graphing, classify each system as *independent, dependent,* or *inconsistent* *(example 3 p.122)*.

3. $\begin{cases} -2x - y = 9 \\ 3x - 4y = -8 \end{cases}$

4. $\begin{cases} y = 4x + 6 \\ -8x + 2y = 12 \end{cases}$

5. $\begin{cases} y = x - 5 \\ 3x - 3y = 15 \end{cases}$

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

Solve the system by the method of substitution *(example 1, p. 127).*

7. $\begin{cases} 3x + y = -3 \\ y = x + 5 \end{cases}$

8. $\begin{cases} 5x - y = 5 \\ 5x - 3y = 15 \end{cases}$

9. $\begin{cases} 2x - y = -1 \\ 3x - 3y = -3 \end{cases}$

*10. The length of a rectangle is 8.7 cm more than 3 times the width. If the perimeter of the rectangle is 70.2 cm, what are its dimensions?

Use the elimination method to solve the system *(example 3, p.128).*

11. $\begin{cases} -4x + 4y = -8 \\ x - 4y = -7 \end{cases}$

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

13. $\begin{cases} 5x + 3y = -6 \\ 3x - 2y = 4 \end{cases}$

14. $\begin{cases} 5x + 3y = 12 \\ 6x - 4y = -16 \end{cases}$

15. $\begin{cases} -x + 2y = 10 \\ -3x + 6y = 11 \end{cases}$

*16. A rental car agency charges a flat fee of $27.00 plus $1.50 per day to rent a certain car. Another agency charges a fee of $12.00 plus $4.00 per day to rent the same car.
a. Write a system of equations to represent the cost *c* for renting a car at each agency for *d* days.
b. Find the number of days for which the costs are the same. *(example 2, p. 128)*

Solve the system of inequalities by graphing *(example*2, p. 136).

17. $\begin{cases} y \le -3x + 3 \\ y > 4x - 2 \end{cases}$

18. $\begin{cases} x \ge -2 \\ y > -3 \end{cases}$

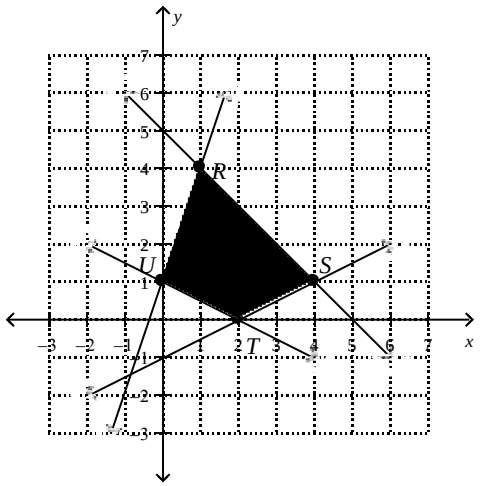
19. $\begin{cases} y \ge -4x - 4 \\ y \le \frac{1}{4}x + 2 \end{cases}$

20. $\begin{cases} y \ge 2 \\ y > |4x - 4| \end{cases}$

21. $\begin{cases} y \ge x \\ y > |2x + 1| - 3 \end{cases}$

22. Your club is baking vanilla and chocolate cakes for a bake sale. They need at most 20 cakes. You cannot have more than 10 chocolate cakes. Write a system of inequalities to model this system. *(example 3, p.137)*

23. Which point gives the minimum value of $P = 3x - 2y$? *(example 1, p. 142)*



24. Given the system of constraints, name all vertices. Then find the maximum value of the given objective function. *(examplen1, p. 142)*

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

Maximum for $P = 3x + 5y$

Solve the 3-variable system. *(example 1, p. 155 and example 3, p. 157)*

25. $\begin{cases} -3x - 2y - 2z = 6 \\ x + y - z = -4 \\ 2x + 3y - 2z = 1 \end{cases}$

26. $\begin{cases} -2x + 3y - 3z = -5 \\ 2x + y - 3z = 9 \\ -x + 3y - z = -1 \end{cases}$

27. $\begin{cases} 3x - 2y + z = 9 \\ x - y + 4z = 10 \\ 2x + 3y - z = 53 \end{cases}$.

____ 28. An independent system of two linear equations ____ has an infinite number of solutions.
a. always b. sometimes c. never

____ 29. A system of two linear inequalities ____ has a solution.
a. always b. sometimes c. never

____ 30. The maximum value of a linear objective function ____ occurs at exactly one vertex of the feasible region.
a. always b. sometimes c. never

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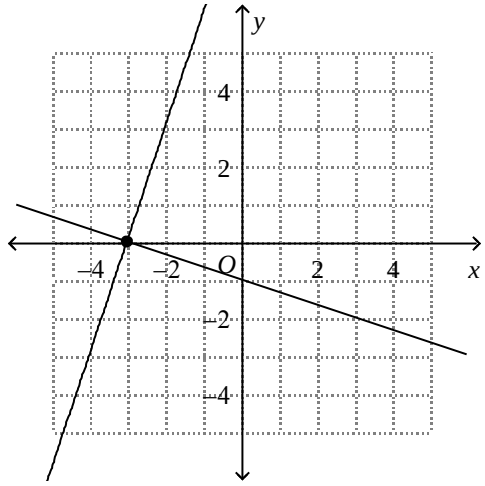
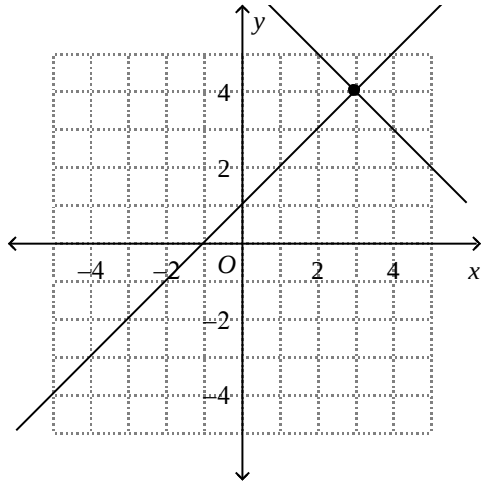
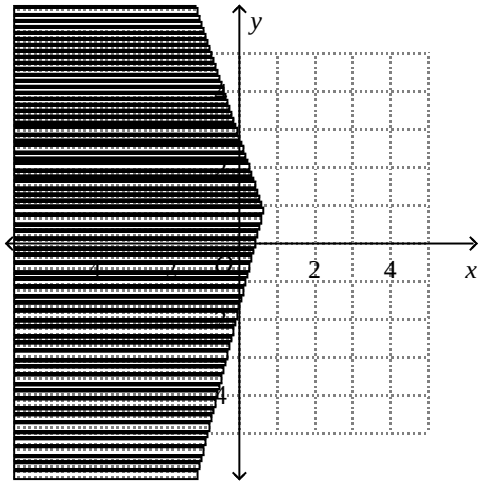
1. 

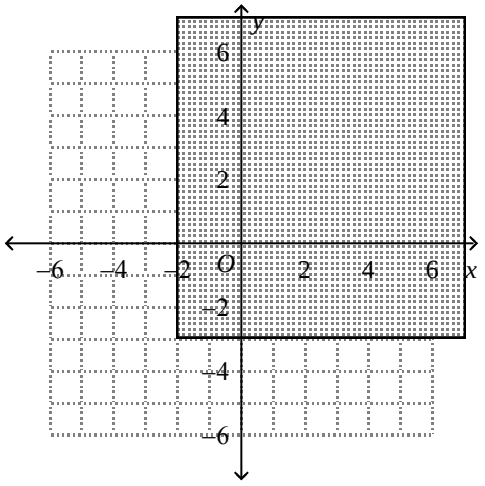
(–3, 0)

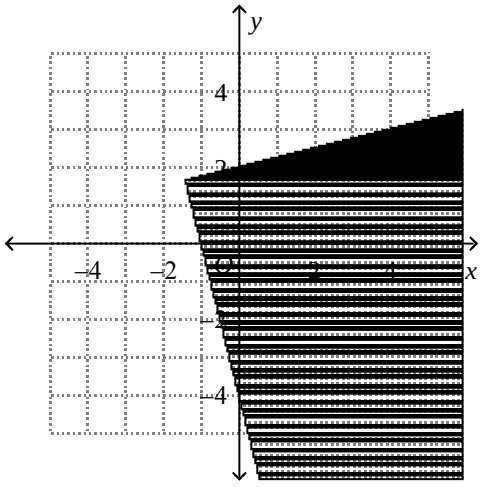
2. 

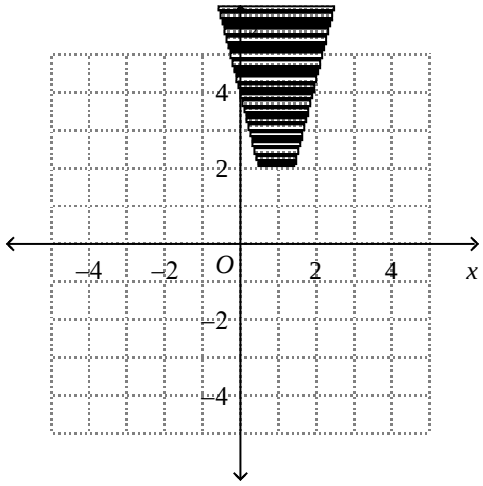
(3, 4)

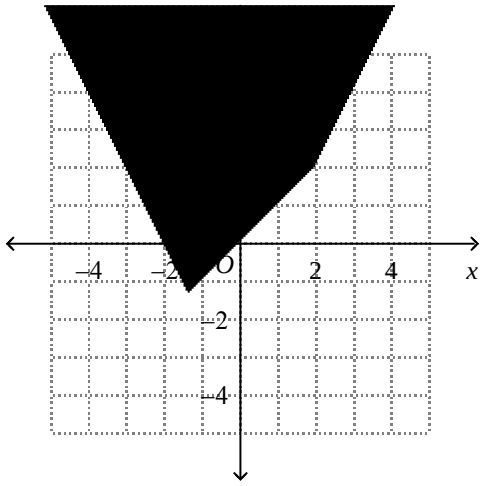
3. independent
4. dependent
5. dependent
6. inconsistent
7. (–2, 3)
8. (0, –5)
9. (0, 1)
10. length = 28.5 cm; width = 6.6 cm
11. (5, 3)
12. (–2, 1)
13. (0, –2)
14. (0, 4)
15. no solutions
16. **a.** $\begin{cases} c = 1.50d + 27.00 \\ c = 4.00d + 12.00 \end{cases}$
b. 6

17. 

18. 

19. 

20. 

21. 

22. Let x = the number of vanilla cakes.
Let y = the number of chocolate cakes.

$$\begin{cases} x \geq 0 \\ y \geq 0 \\ x + y \leq 20 \\ y \leq 10 \end{cases}$$

23. $R(1, 4)$
24. (0, 0), (4, 0), (2, 3), (0, 5); maximum value of P = 25 at (0, 5)
25. (–10, 9, 3)
26. (4, 1, 0)
27. (10, 12, 3)

MULTIPLE CHOICE

28. C
29. B
30. B