

MATH 171, Exam 4 Review Packet

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. Use the substitution method to find all solutions of the system of equations.

$$\begin{cases} y = x^2 \\ y = x + 56 \end{cases}$$

- a. (7, 49), (-7, 49)
b. (8, 64), (-7, 49)
c. (7, 49), (8, 64)
d. (8, 49), (-7, 64)
e. (-8, 64), (7, 49)
- _____ 2. Use the substitution method to find all solutions of the system of equations.

$$\begin{cases} x^2 + y^2 = 90 \\ x + 3y = 0 \end{cases}$$

- a. (9, -3)
b. (-9, 3), (9, -3)
c. (-9, -3), (9, 3)
d. (-9, 3)
e. (-3, 9), (9, -3)
- _____ 3. Use the elimination method to find all solutions of the system of equations.

$$\begin{cases} x^2 - 2y = 67 \\ x^2 + 9y = 144 \end{cases}$$

- a. (9, 7)
b. (7, 9), (-7, 9)
c. (-9, -7), (-7, 9)
d. (9, 7), (-9, 7)
e. (9, 7), (-9, -7)

- ____ 4. Find all solutions of the system of equations.

$$\begin{cases} 6x^2 - 8y^2 = 270 \\ 4x^2 + 9y^2 = 567 \end{cases}$$

- a. (9, 3), (-9, 3), (-9, -3)
b. (9, 3), (-9, -3)
c. (-3, -9), (3, 9)
d. (-9, 3), (9, -3)
e. (9, 3), (-9, 3)
- ____ 5. Use the graphical method to find all solutions of the system of equations.

$$\begin{cases} y = 4x + 8 \\ y = 18 - x \end{cases}$$

- a. (16, -2)
b. (2, 16)
c. (-2, -16)
d. (16, 2)
e. none of these
- ____ 6. Use the graphical method to find all solutions of the system of equations.

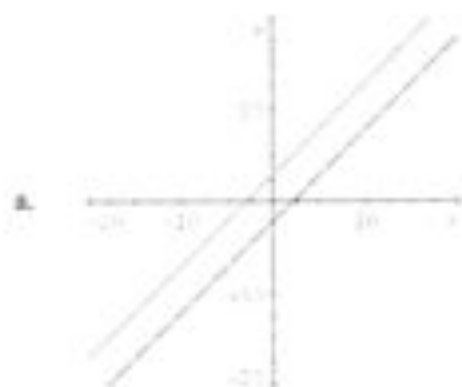
$$\begin{cases} y = x^2 - 11x \\ 2x - y = 42 \end{cases}$$

- a. (7, -28)
b. (-7, 28), (7, -30)
c. (6, 28), (7, 30)
d. (7, -28), (6, -30)
e. (14, -56), (12, -60)
- ____ 7. A rectangle has an area of
- 306 cm^2
- and a perimeter of 70 cm. What are its dimensions?

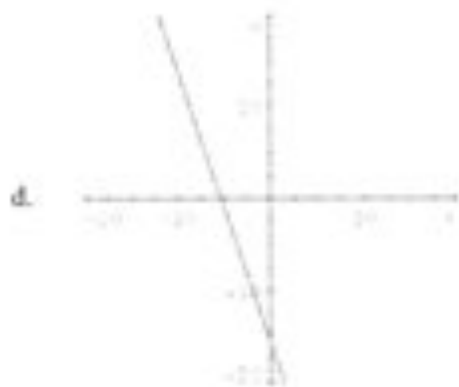
- a. length is -18 cm, width is -17 cm
b. length is 16 cm, width is 19 cm
c. length is 8 cm, width is 27 cm
d. length is 18 cm, width is 17 cm
e. length is 17 cm, width is 18 cm

- _____ 8. Graph the linear system, either by hand or using a graphing device. Use the graph to determine if the system has one solution, no solution, or infinitely many solutions. If there is exactly one solution, use the graph to find it.

$$\begin{cases} -x + \frac{1}{3}y = -2 \\ 3x - y = 16 \end{cases}$$



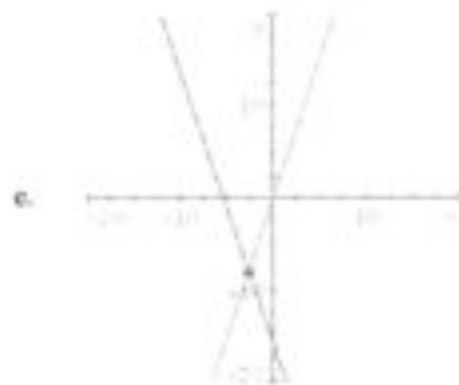
The system has no solution.



The system has infinitely many solutions.



$x=0, y=-16$



$x=-5, y=-5$



The system has no solution.

9. Solve the system.

$$\begin{cases} 6x - 14y = 2 \\ -12x + 28y = -4 \end{cases}$$

- a. $x=4, y=1$
b. $x=2, y=1$
c. $x=3, y=7$
d. $(x, \frac{3x-1}{7})$
e. No solution
10. A man has 16 coins in his pocket, all of which are dimes and quarters. If the total value of his change is \$2.50, how many dimes and how many quarters does he have?
- a. 13 dimes, 3 quarters
b. 10 dimes, 6 quarters
c. 12 dimes, 4 quarters
d. 11 dimes, 5 quarters
e. 9 dimes, 7 quarters
11. Find the complete solution of the linear system, if possible.

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

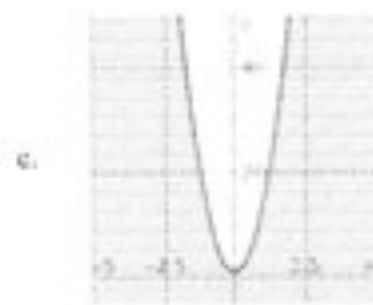
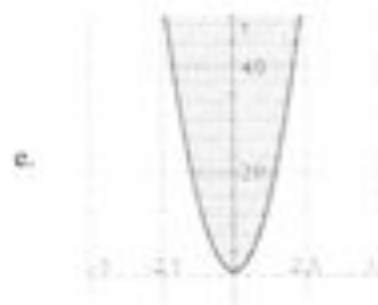
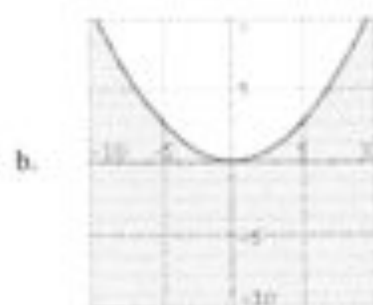
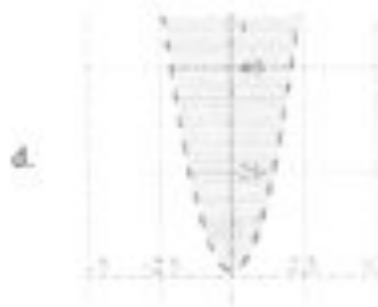
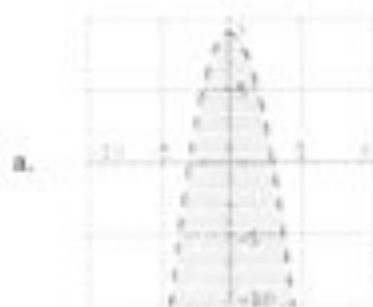
- a. $x=0, y=0, z=0$
b. $x=8, y=4, z=6$
c. $x=4, y=2, z=2$
d. $x=2, y=2, z=4$
e. The system is inconsistent.

- ____ 12. Find the complete solution of the linear system, if possible.

$$\begin{cases} 2x + 6y - z = 3 \\ x + 3y + 4z = 6 \\ x + 3y - 2z = 0 \end{cases}$$

- a. $x = 1 - 6t$, $y = t$, $z = 1$
 b. $x = 1$, $y = 1$, $z = 1$
 c. $x = 2 + 6t$, $y = t$, $z = 1$
 d. $x = 2 - 3t$, $y = t$, $z = 1$
 e. The system is inconsistent.

- ____ 13. Which of the following graphs corresponds to the inequality $y > 9x^2 + 1$?



14. Which of the following graphs corresponds to the inequality $x^2 + y^2 \geq 1$?



15. Solve the system of inequalities.

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

a.
$$\begin{cases} x \leq 10 - y, y \geq 9 \\ x \leq y, y < 9 \end{cases}$$

d.
$$\begin{cases} x \geq 8 - y, y < 4 \\ x \geq y, y \geq 4 \end{cases}$$

b.
$$\begin{cases} x \leq 10 - y, y \geq 5 \\ x \leq y, y < 5 \end{cases}$$

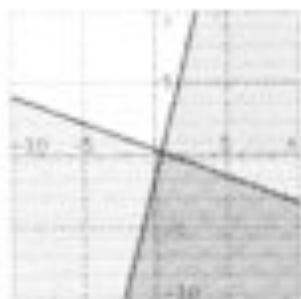
e.
$$\begin{cases} x \leq 10 - y, y \geq 10 \\ x \leq y, y < 2 \end{cases}$$

c.
$$\begin{cases} x \leq 10 - y, y \geq 2 \\ x \leq y, y < 2 \end{cases}$$

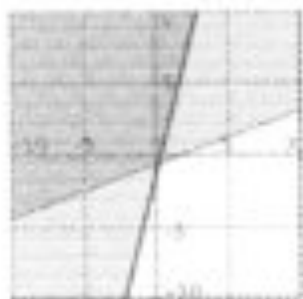
16. Solve the system of inequalities.

$$\begin{cases} 3x + 8y \geq 3 \\ 8x - 2y \leq 3 \end{cases}$$

a.



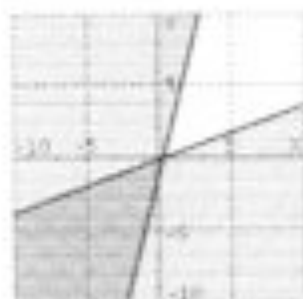
d.



b.



e.

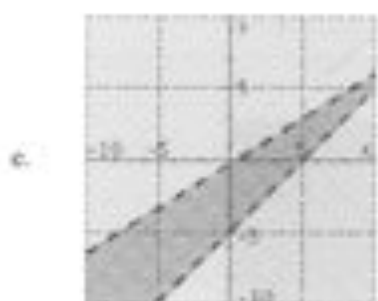
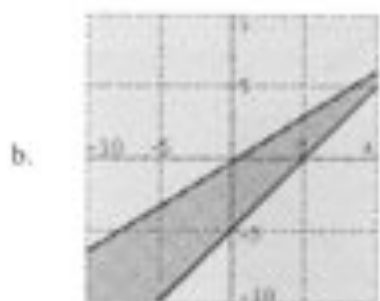
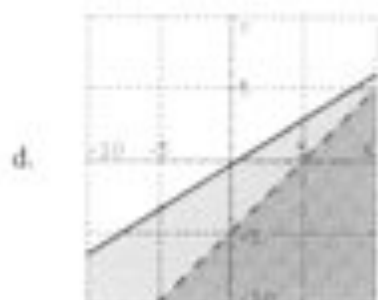


c.



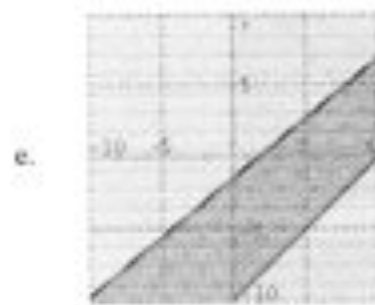
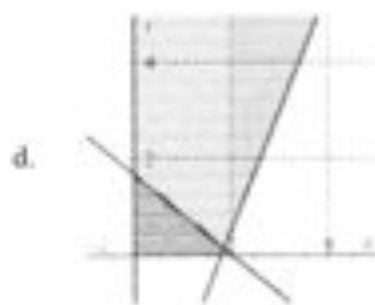
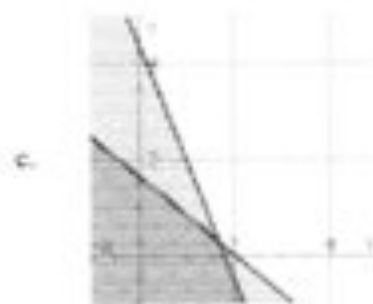
17. Solve the system of inequalities.

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



18. Solve the system of inequalities.

$$\begin{cases} x \geq 0 \\ y \geq 0 \\ 5x + 6y \leq 10 \\ 5x + 2y \leq 9 \end{cases}$$



19. Use a graphing calculator to graph the solution of the system of inequalities. Find the coordinates of all vertices, correct to one decimal place.

$$\begin{cases} y \leq 8x - x^2 \\ x + y \geq 4 \end{cases}$$

- a. (8.7, -4.5) and (0.5, 3.3)
b. (8.1, -4.5) and (0.5, 3.1)
c. (8.5, -4.5) and (0.5, 3.5)
d. (8.4, -4.5) and (0.5, 3.6)
e. (8.2, -4.5) and (0.5, 3.2)
20. Determine which of the following matrices is in echelon form.

a. $\begin{bmatrix} 0 & 6 & 1 \\ 3 & 1 & 0 \end{bmatrix}$

c. $\begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 6 \end{bmatrix}$

e. $\begin{bmatrix} 0 & 1 & 6 \\ 0 & 1 & 3 \end{bmatrix}$

b. $\begin{bmatrix} 1 & 6 & 6 \\ 1 & 0 & 2 \end{bmatrix}$

d. $\begin{bmatrix} 0 & 2 & 6 \\ 0 & 1 & 3 \end{bmatrix}$

21. Determine whether the system of linear equations is inconsistent or dependent. If it is dependent, find the complete solution.

$$\begin{cases} x + y = 1 \\ 4x + 4z = 20 \\ 2x + y + z = 6 \end{cases}$$

- a. $y = 1 - x, z = 5 - x, x = \text{any number}$
b. $x = 1 - y, z = 5 - x, y = \text{any number}$
c. $y = x + 1, z = x - 20, x = \text{any number}$
d. $x = y + 1, z = x - 20, y = \text{any number}$
e. no solution

- _____ 22. Determine whether the system of linear equations is inconsistent or dependent. If it is dependent, find the complete solution.

$$\begin{cases} x - y + 5z = 3 \\ 5x - 15y + 10z = 25 \\ 2x - 4y + 7z = 7 \end{cases}$$

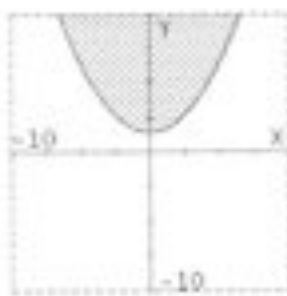
- a. $x = 3 - y, z = 5 - x, y = \text{any number}$
 b. $y = 3 - x, z = 5 - x, x = \text{any number}$
 c. $y = x + 3, z = x - 25, x = \text{any number}$
 d. $x = y + 3, z = x - 25, y = \text{any number}$
 e. no solution

Matching

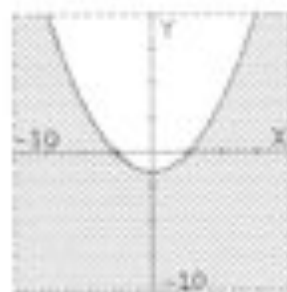
Match each graph below with the letter of the corresponding inequality.

- a. $-x^2 + 5y \geq 7$
 b. $x^2 - 5y \geq 7$

_____ 23.



_____ 24.



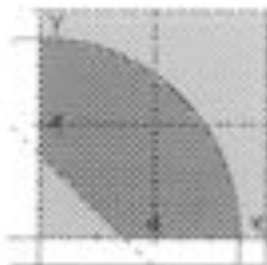
Solve the systems of inequalities.

Match each graph below with the letter of the corresponding system.

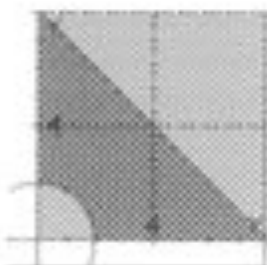
$$a. \begin{cases} x > 0 \\ y > 0 \\ x + y < 8 \\ x^2 + y^2 > 4 \end{cases}$$

$$b. \begin{cases} x > 0 \\ y > 0 \\ x + y > 3 \\ x^2 + y^2 < 49 \end{cases}$$

_____ 25.



_____ 26.



**MATH 171, Exam 4 Review Packet
Answer Section**

MULTIPLE CHOICE:

1. ANS: B	PTS: 1	MSC: srca.06.01.03m
2. ANS: B	PTS: 1	MSC: srca.06.01.05m
3. ANS: D	PTS: 1	MSC: srca.06.01.11m
4. ANS: E	PTS: 1	MSC: srca.06.01.33m
5. ANS: B	PTS: 1	MSC: srca.06.01.37m
6. ANS: D	PTS: 1	MSC: srca.06.01.40m
7. ANS: D	PTS: 1	MSC: srca.06.01.47m
8. ANS: C	PTS: 1	MSC: srca.06.02.05m
9. ANS: D	PTS: 1	MSC: srca.06.02.25m
10. ANS: B	PTS: 1	MSC: srca.06.02.45m
11. ANS: E	PTS: 1	MSC: srca.06.03.25m
12. ANS: D	PTS: 1	MSC: srca.06.03.30m
13. ANS: D	PTS: 1	MSC: srca.06.04.11m
14. ANS: E	PTS: 1	MSC: srca.06.04.12m
15. ANS: B	PTS: 1	MSC: srca.06.04.19m
16. ANS: B	PTS: 1	MSC: srca.06.04.20m
17. ANS: D	PTS: 1	MSC: srca.06.04.22m
18. ANS: A	PTS: 1	MSC: srca.06.04.23m
19. ANS: C	PTS: 1	MSC: srca.06.04.43m
20. ANS: C	PTS: 1	MSC: srca.07.01.07am
21. ANS: A	PTS: 1	MSC: srca.07.01.26m
22. ANS: E	PTS: 1	MSC: srca.07.01.29m

MATCHING

23. ANS: A	PTS: 1	MSC: srca.06.04.10
24. ANS: B	PTS: 1	MSC: srca.06.04.10
25. ANS: B	PTS: 1	MSC: srca.06.04.28
26. ANS: A	PTS: 1	MSC: srca.06.04.28