

Chapter 3 Review TMA

Solve. For # 1 – 10 you must **ALSO** graph the **FINAL** answers. You must write your answers in set notation.

1. $-3 < x \leq 4$

2. $x \leq -3$ OR $x > 1$

3. $\frac{5-2x}{-7} > 3$

4. $|5x-4| \geq 19$

1. _____

2. _____

5. $|2x-7| \leq 10$

6. $1 < |2x-19| < 5$

3. _____

4. _____

7. $x^2 + 3x - 10 \leq 0$

8. $x^3 \geq x$

5. _____

6. _____

9. $\frac{x+1}{x^2-25} \geq 0$

10. $(x+2)(x-1)^2(x-3) < 0$

7. _____

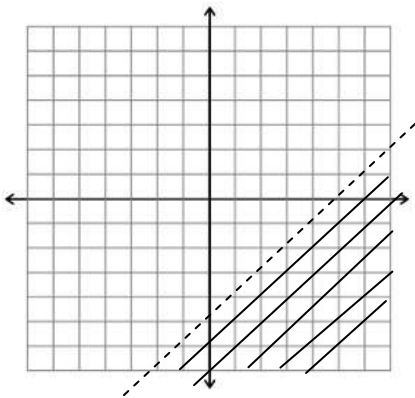
8. _____

9. _____

10. _____

11. _____

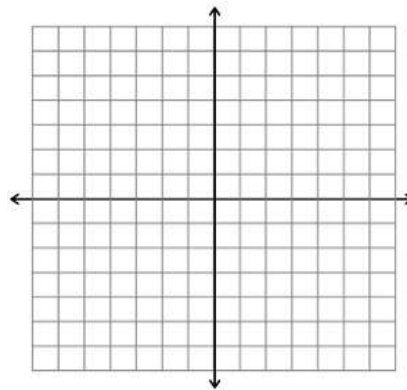
11. Write an inequality that defines the shaded region.



12. Graph the solution to the system

$$2x + 3y < 12$$

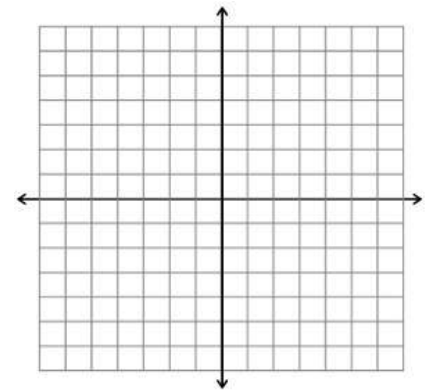
$$-1 < x < 3$$



13. Graph the solution to the system:

$$y \geq x^2 - 4$$

$$y \leq x$$



Earthquake victims in Haiti need medical supplies and bottled water. Each medical kit measures 1 cubic foot and weighs 10 pounds. Each container of water is also 1 cubic foot but weighs 20 pounds. The plane can carry 80,000 pounds with a total volume of 6,000 cubic feet. It is estimated that each medical kit will aid 4 people, while each container of water will aid 10 people.

14. State the objective function using x for medical kits and y for containers.

14. _____

15. x and y are both positive. List the other constraints.

15. _____

16. Sketch the feasible region below, list all the vertices and find the point that will aid the maximum number of people. State the point in the answer column.

16. _____

Answers:

1. $-3 < x \leq 4$

2. $x \leq -3$ OR $x > 1$

3. $x > 13$

4. $x \geq \frac{23}{5}$ OR $x \leq -3$

$(-3, 4]$

$(-\infty, 3]$ or $(1, \infty)$

$(13, \infty)$

$[\frac{23}{5}, \infty)$ or $(-\infty, -3]$

5. $\frac{-3}{2} \leq x \leq \frac{17}{2}$

6. $(7, 9)$ OR $(10, 12)$

7. $-5 \leq x \leq 2$

8. $-1 \leq x \leq 0$ OR $x \geq 1$

$[-\frac{3}{2}, \frac{17}{2}]$

9. $-5 < x \leq -1$ OR $x > 5$

10. $-2 < x < 3$ with $x \neq 1$

$[-5, 2]$

11. $y < x - 5$

$[-1, 0]$ or $[1, \infty)$

$(-5, -1]$ or $(5, \infty)$

$(-2, 1)$ OR $(1, 3)$

14. $C = 4x + 10y$

15. $10x + 20y \leq 80,000$
 $x + y \leq 6,000$

16. $(0, 4000)$

