

**Math 100**  
**Midterm**

Name \_\_\_\_\_  
Section \_\_\_\_\_ Date \_\_\_\_\_

1. List all the elements of the set that are **rational numbers**. \_\_\_\_\_

$$\{-\sqrt{49}, 0, \frac{1}{2}, -2.19, \sqrt{5}\}$$

5 points

2. Evaluate the expression if  $a = -3$  and  $b = -4$ . \_\_\_\_\_

$$\frac{6a - 4b^2}{11 - a^2}$$

5 points

3. Which **property** justifies the statement? \_\_\_\_\_

$$3 + (4 + 5) = (3 + 4) + 5$$

3 points

- a) Distributive property  
c) Identity property

- b) Associative property  
d) Commutative property

4. Solve the equation. \_\_\_\_\_

$$\frac{3t}{2} + \frac{4t}{7} = -5$$

4 points

5. Decide whether the equation is **conditional, an identity, or a contradiction**. \_\_\_\_\_

$$6t - 3(5 + 2t) + 3 = -12$$

3 points

Give the **solution set**. \_\_\_\_\_

3 points

6. Solve the formula for  $A$ .

$$B = \frac{5}{7}(A - 32)$$

\_\_\_\_\_

4 points

7. Jack receives \$45.00 per month allowance. He spends \$13.50 each month for a haircut. What **percent** of his allowance does he have left to spend on other things?

\_\_\_\_\_

5 points

8. Solve the inequality. Give the solution set in both **interval and graph forms**.

$$7 - 3(t - 2) \leq -(t + 1)$$

\_\_\_\_\_

3 points



3 points

9. For the compound inequality, give the solution set in both **interval and graph forms**.

$$4t < 2t + 10 \text{ or } t - 3 > 3$$

\_\_\_\_\_

3 points



3 points

10. Let  $A = \{1, 3, 5, 7, 9\}$  and  $B = \{2, 4\}$ .
- a. Find  $A \cup B$ .

\_\_\_\_\_

3 points

- b. Find  $A \cap B$ .

\_\_\_\_\_

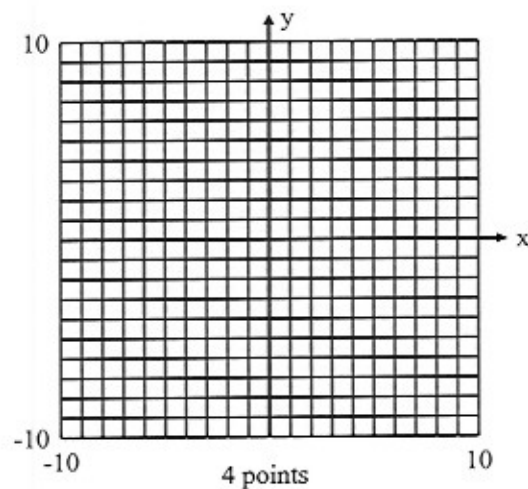
3 points

11. a. Complete the table of ordered pairs for the equation  $4x - 3y = -12$ .

x	y
0	
	0
3	
	-8

4 points

- b. Graph the equation.



4 points

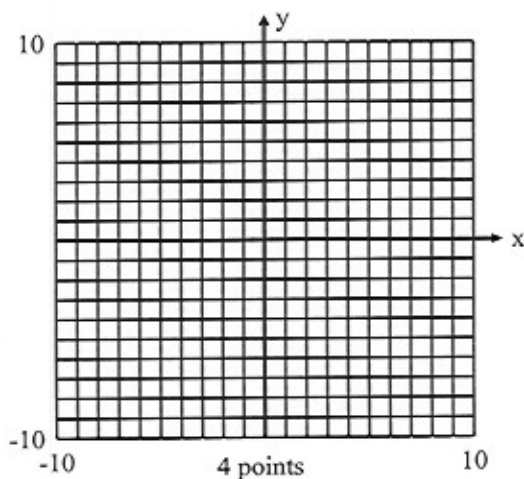
12. a. Find the **slope** of the line  $2x + y = 3$ .

slope: \_\_\_\_\_  
2 points

- b. Find the **y-intercept**.

y-intercept: \_\_\_\_\_  
2 points

- c. **Graph** the equation.



4 points

13. Write the equation of the line through the point  $(-2, 4)$  and with a slope of 3. Write the equation in **standard form**.

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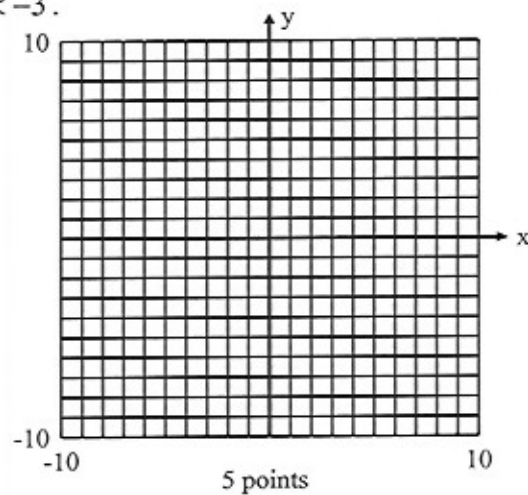
5 points

14. Write an equation of the line through the point  $(9, 8)$  that is perpendicular to  $3x - 4y = 0$ . Write the equation in **slope-intercept form**.

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5 points

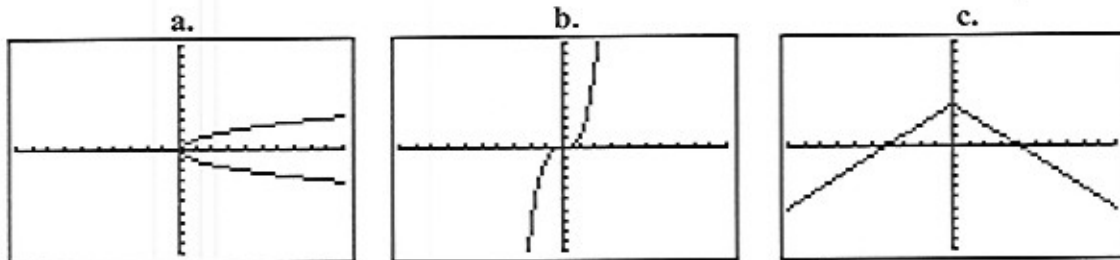
15. **Graph** the inequality  $x - 3y < -3$ .



16. Which of the following is **not** the graph of a function?

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3 points



17. For  $f(x) = -x^2 - 3x - 7$ , find each.

a.  $f(-2)$

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3 points

b.  $f(3b)$

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3 points

18 Solve the system and write the solution in the form  $(x, y)$ .

$$\begin{cases} 5x - y = 2 \\ -3x + 4y = 26 \end{cases}$$

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5 points

19. Jack invested \$40,000, part at 4% and the rest at 6%. The total annual return from the two investments is \$1740, **how much is invested at each rate?**

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5 points