

Name: Rubric

UIN: _____

Instructor:: _____

UIC email: _____

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- You are expected to abide by the University's rules concerning Academic Honesty.
- You may *not* use your books, notes, or any electronic device including calculators and cell phones.
- Show ALL your work. Unsupported answers will not receive credit.
- Always state a complete answer to the problem.
- Do not write above the type at the top of any pages. If you do, your work may not be graded in that area, because the scanner may miss it.
- Please check that all the page numbers on each page of your exam match.

(1) Solve for x .

$$4x - 1 = -3(x - 9)$$

$$4x - 1 = -3x + 27$$

$$7x = 28$$

$$x = 4$$

8 points

$$\frac{x-1}{2} + \frac{5-x}{3} = 5 \quad / \cdot 6$$

$$3(x-1) + 2(5-x) = 30$$

$$3x - 3 + 10 - 2x = 30$$

$$x = 23$$

8 points

(2) Solve for L .

$$2W + 2L = P$$

$$2L = P - 2W$$

$$L = \frac{P - 2W}{2}$$

5 points

- (3) At a thrift store, all tops are the same price and all pants are the same price. Cora buys five tops and two pants for \$34. Her friend buys two tops and one pant for \$15. What is the price for a top? What is the price for a pant?

$$\begin{aligned} x &= \text{cost of top} \\ y &= \text{cost of pants} \end{aligned}$$

$$\begin{cases} 5x + 2y = 34 \\ 2x + y = 15 \end{cases}$$

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

10 points

$$\begin{cases} 5x - 4x + 30 = 34 \\ y = -2x + 15 \end{cases}$$

- (4) Solve the following absolute value equation.

$$|5x + 2| = 8$$

$$5x + 2 = 8 \quad \text{or} \quad 5x + 2 = -8$$

$$5x = 6 \quad \text{or} \quad 5x = -10$$

$$x = \frac{6}{5}, -2$$

8 points

- (5) Solve the following inequality. Graph your solution and write it in interval notation.

$$-2x + 34 \geq 4$$

$$2x \leq 30$$

$$x \leq 15$$

$$(-\infty, 15]$$



7 points

(6) Given the linear equation $y = \frac{1}{3}x - 2$, answer the following.

a. Find the slope, y -intercept, and x -intercept of the function.

slope:

$$\frac{1}{3}$$

y -intercept:

$$(0, -2)$$

x -intercept:

$$0 = \frac{1}{3}x - 2$$

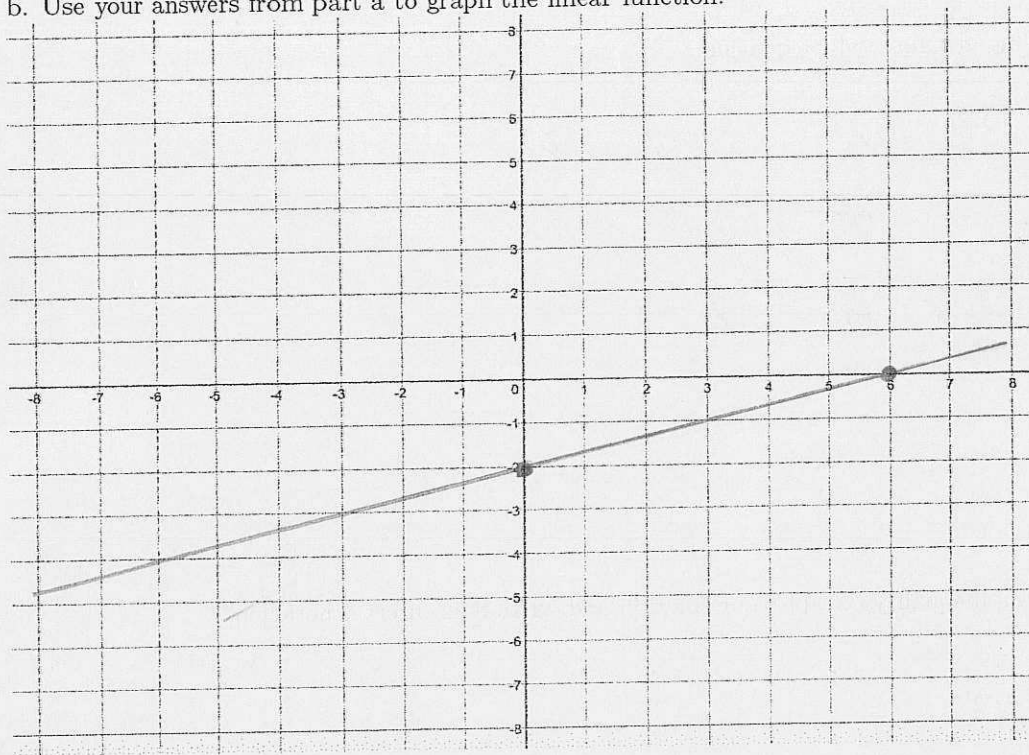
$$\frac{1}{3}x = 2$$

$$x = 6$$

$$(6, 0)$$

10 points

b. Use your answers from part a to graph the linear function.



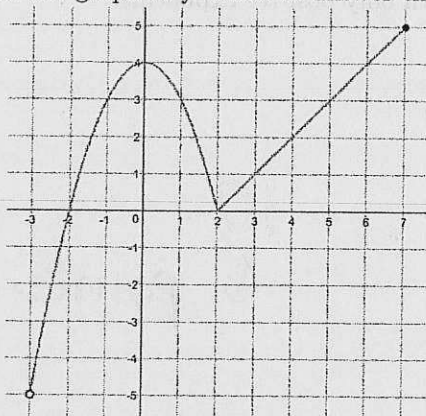
c. Find the equation of the line that is perpendicular to this line, $y = \frac{1}{3}x - 2$, and passes through the point $(1, 1)$.

$$m = -3$$

$$y - 1 = -3(x - 1)$$

$$y = -3x + 4$$

(7) Use the graph of f below to answer the following.



7 points

a. State the domain of f .

$$(-3, 7]$$

b. State the range of f .

$$(-5, 5]$$

c. Find the following.

$$f(-1) = 3$$

$$f(3) = 1$$

d. For what value of x is $f(x) = 5$?

$$x = 7$$

(8) Find the domain of the function.

$$g(x) = \sqrt{2x+1}$$

$$2x+1 \geq 0$$

$$x \geq -\frac{1}{2}$$

$$\left[-\frac{1}{2}, +\infty\right)$$

4 points

(9) Simplify the following as much as possible. Leave your answers with only positive exponents.

a. $\frac{3u^6 p^5}{9u^7 p} = \frac{1}{3} \frac{1}{u} p^4 = \frac{p^4}{3u}$

6 points

b. $3x^{-2} = \frac{3}{x^2}$

2 points

c. $\left(\frac{x^{-2}y^5}{w^3}\right)^2 (x^8y^3z^6) = (x^{-4}y^{10}w^{-6})(x^8y^3z^6)$
 $= \frac{x^4y^{13}z^6}{w^6}$

6 points

(10) Factor the following.

a. $xy + 5x + 4y + 20$

$$= y(x+4) + 5(x+4)$$

$$= (y+5)(x+4)$$

4 points

b. $2x^2y - 32y$

$$= 2y(x^2 - 16)$$

$$= 2y(x-4)(x+4)$$

5 points

(11) Solve the following.

a. $x^2 = 5x + 6$

$$x^2 - 5x - 6 = 0$$

$$(x-6)(x+1) = 0$$

$$x = 6, -1$$

6 points

b. $2x^2 - 8 = 0$

$$2(x^2 - 4) = 0$$

$$2(x-2)(x+2) = 0$$

$$x = 2, -2$$

4 points

