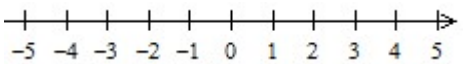
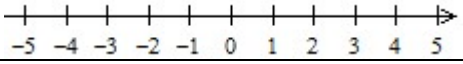
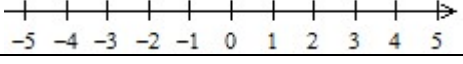
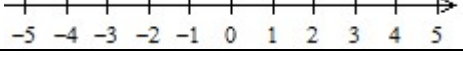
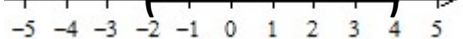


Math 0305 Review for Final Exam

1. Given the set of numbers $\left\{-9, -1.3, 0, -\frac{5}{6}, \pi, \sqrt{9}, \sqrt{10}\right\}$, list the numbers in the set that are:
- a.) natural numbers b.) whole numbers c.) integers
 d.) rational numbers e.) irrational numbers f.) real numbers

2. Complete the table for the inequalities, graphs, and the indicated notations.

Inequality	Graph	Interval Notation	Set-Builder Notation
a.) All Real Numbers			
b.)		$(-\infty, 0)$	
c.)			$\{x x \geq 2\}$
d.) $-3 \leq x < 1$			
e.)			

3. If $A = \{2, 4, 6, 8, 10\}$ and $B = \{4, 6, 10, 12, 14\}$, list the elements of each set.

a.) $A \cap B$ b.) $A \cup B$

4. Name the property or the law illustrated by each equation.

a.) $-7 \cdot 2 = 2 \cdot (-7)$

b.) $8(5+2) = 8 \cdot 5 + 8 \cdot 2$

c.) $3 + (a+b) = (3+a) + b$

5. Evaluate $\frac{2x - y + 6}{2y - x}$ for $x = 7$ and $y = 5$.

6. Translate the phrase "Five less than the quotient of a number and six" to an algebraic expression.

7. Simplify: $\frac{(-3)^2 + |4(-5)| - 7^2}{-3 - (4 - 2)}$

8. Simplify: $18 \div 6 + 4 \left[5 + 2(8 - 10)^3 \right]$

9. Simplify: $5(3a - 4) - (2a - 1)$

10. Solve: $5x - 2 + 3x = 13 + 4x - 3$

11. Solve: $2(x - 3) - 17 = 13 - 3(x + 2)$

12. Solve: $\frac{x}{4} - 1 = \frac{2}{3}x - \frac{1}{6}$

13. Solve for b : $P = 2a + 2b$

14. Solve for y : $PR = \frac{x + yz}{w}$

15. A car rental agency charges \$200 per week plus \$0.15 per mile to rent a car. How many miles can you travel in one week for \$320.

16. Solve: $7 - 2(x - 4) < 5 - 10x$ Write your solution in interval notation.

17. Solve: $\frac{5y}{3} - 2 \geq 8$ Write your solution in set-builder notation.

18. Solve: $-11 < 2x - 1 \leq -5$ and write your solution in set-builder notation.

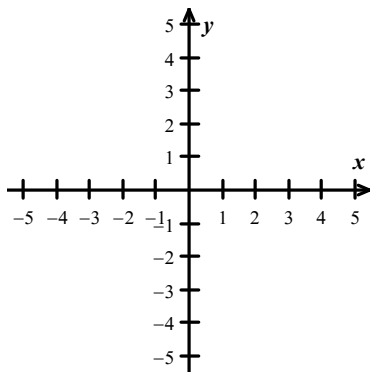
19. Solve: $0 < \frac{x + 4}{2} < 3$ and write your solution in interval notation.

20. Complete each ordered pair so that it is a solution of the given linear equation $5x + 2y = -2$.

a.) $(\square, 4)$

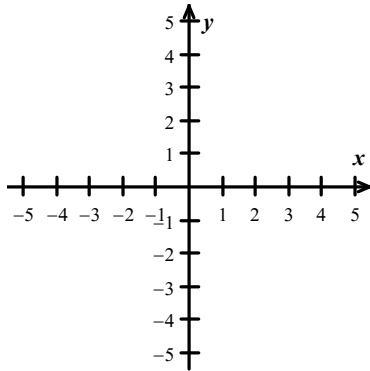
b.) $(-4, \square)$

21. Graph: $2x - y = 4$

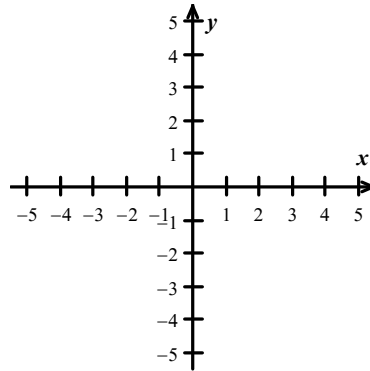


22. Find the x -intercept and y -intercept of the graph of $3x - 4y = 24$.

23. a.) Graph: $x = 3$



b.) Graph: $3y = -6$



24. Find the slope of a line parallel to the line passing through $(3, -1)$ and $(4, 2)$.

25. State the slope of the line perpendicular to the line $2x - 5y = 8$.

A. $-\frac{2}{5}$

B. $-\frac{5}{2}$

C. $\frac{2}{5}$

D. $\frac{5}{2}$

E. $-\frac{8}{5}$

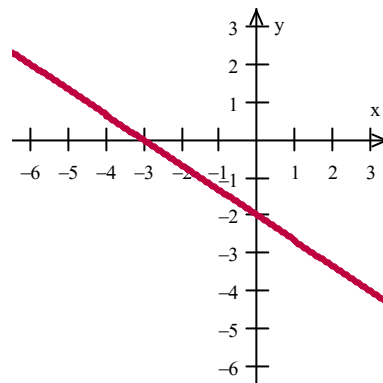
26. Using the graph, find

a.) x -intercept

b.) y -intercept

c.) slope

d.) the equation of the line



27. Find an equation of the line in slope-intercept form given the specified slope and one point.

a.) $m = -\frac{3}{5}, (0, -2)$

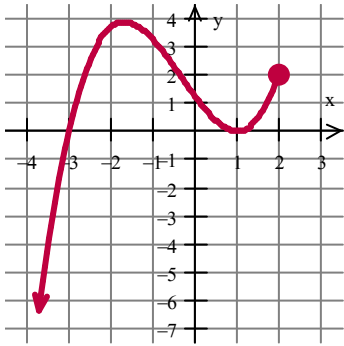
b.) $m = \frac{4}{3}, (-3, 3)$

28. Find an equation of the line connecting the given points in slope-intercept form.

a.) $(-2, 0), (0, -2)$

b.) $(-3, -1), (4, -1)$

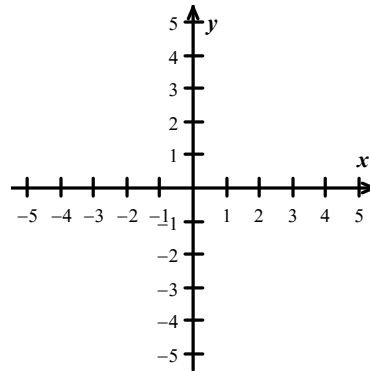
29. From the graph,
 a.) identify the domain and range in interval notation,
 b.) determine whether the graph is the graph of a function.



30. Find $f(-3)$ for $f(x) = 2x^2 - 4x + 5$.

31. Solve the system of equations by graphing.

$$\begin{cases} 2x + 3y = 6 \\ y = -\frac{2}{3}x + 2 \end{cases}$$



32. Solve the system of equations using Substitution Method.

$$\begin{cases} 2x - y = -5 \\ x + 5y = 14 \end{cases}$$

33. Solve the system of equations using Elimination Method.

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

34. In a discount clothing store, all sweaters are sold at one fixed price and all shirts are sold at another fixed price. If one sweater and three shirts cost \$42, while three sweaters and two shirts cost \$56, find the price of one sweater and the price of one shirt.
35. A chemist working on a flu vaccine needs to mix a 10% sodium-iodine solution with a 60% sodium-iodine solution to obtain 50 milliliters of a 30% sodium-iodine solutions. How many milliliters of the 10% solution and of the 60% solution should be mixed?

36. Multiply: $(7x^5y^6)(-3xy^2)^2$

37. Simplify: $(-2x^3y^{-1})^{-3}$ Write your answer with positive exponents.

38. Simplify: $\left(\frac{9x^{-2}y^4}{3xy^{-4}}\right)^2$ Write your answer with positive exponents.

39. Subtract: $(6x^3 - 3x^2 - 7) - (-x^3 + 5x - 9)$

40. Multiply: $-5a^2b^3(3a^2 - 2ab^2 + 7ab^3)$

41. Multiply: $(x - 2)(x^2 - 5x + 4)$

42. Multiply: $(3x + 7y)(5x - 4y)$

43. Multiply: $(3x + 8)(3x - 8)$

44. Multiply: $(2x - 5)^2$

45. Divide: $\frac{-9x^5 + 3x^4 + 12x^3}{-3x^3}$

46. Divide: $\frac{3x^2 - x - 4}{x - 1}$

47. Factor completely: $x^3 - 3x^2 - 4x + 12$

48. Factor: $3x^2 + 30x + 63$

49. Factor: $6x^2 - 17x + 12$

50. Factor: $18x^3 - 8x$

51. Factor: $x^2 + 49$

52. Solve: $10x^2 + 5x = 0$

53. Solve: $x^2 - x = 56$

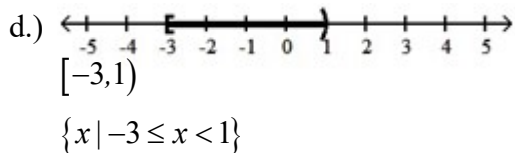
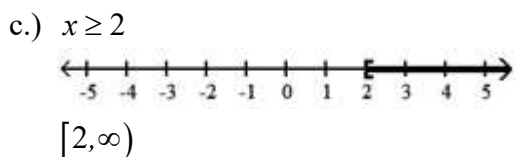
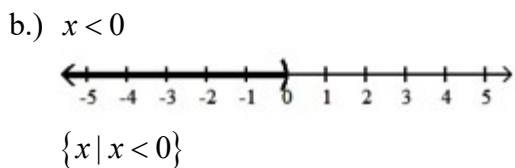
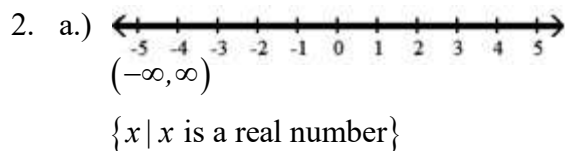
54. Solve: $12x^2 - 30 = -2x$

55. Find the length of the shorter leg of a right triangle if the longer leg is 10 miles more than the shorter leg and the hypotenuse is 10 miles less than twice the shorter leg.

Math 0305 Review for Final Exam

ANSWER KEY

1. a.) $\sqrt{9}$
 b.) $0, \sqrt{9}$
 c.) $-9, 0, \sqrt{9}$
 d.) $-9, -1.3, 0, -\frac{5}{6}, \sqrt{9}$
 e.) $\pi, \sqrt{10}$
 f.) $-9, -1.3, 0, -\frac{5}{6}, \pi, \sqrt{9}, \sqrt{10}$



- e.) $-2 < x < 4$
 $(-2, 4)$
 $\{x \mid -2 < x < 4\}$

3. a.) $A \cap B = \{4, 6, 10\}$
 b.) $A \cup B = \{2, 4, 6, 8, 10, 12, 14\}$
4. a.) Commutative law of multiplication
 b.) Distributive law of multiplication over addition
 c.) Associative law of addition

5. 5
6. $\frac{x}{6} - 5$
7. 4

8. -41
9. $13a - 19$
10. 3
11. 6
12. -2
13. $b = \frac{P - 2a}{2}$
14. $y = \frac{PRw - x}{z}$
15. 800 miles

16. $\left(-\infty, -\frac{5}{4}\right)$

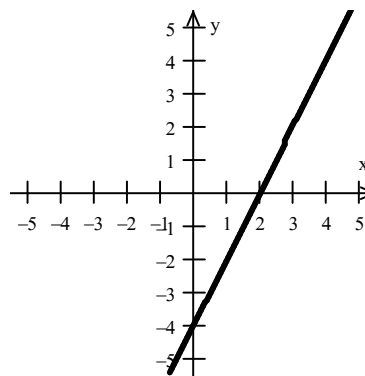
17. $\{y \mid y \geq 6\}$

18. $\{x \mid -5 < x \leq -2\}$

19. $(-4, 2)$

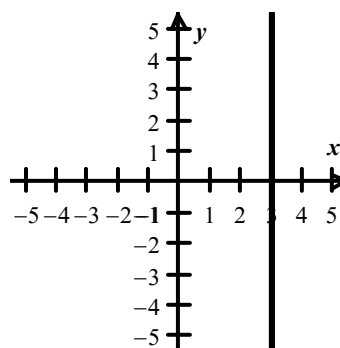
20. a.) $(-2, 4)$ b.) $(-4, 9)$

21.

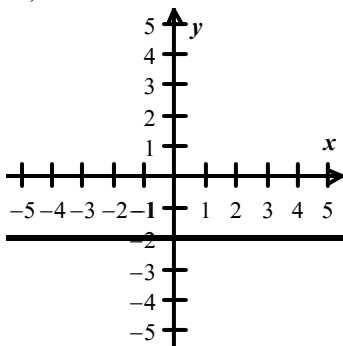


22. x-intercept: $(8, 0)$; y-intercept: $(0, -6)$

23. a.)



23. b.)



24. slope = 3

25. B. $-\frac{5}{2}$

26. a.) $(-3, 0)$ b.) $(0, -2)$

c.) $-\frac{2}{3}$ d.) $y = -\frac{2}{3}x - 2$

27. a.) $y = -\frac{3}{5}x - 2$ b.) $y = \frac{4}{3}x + 7$

28. a.) $y = -x - 2$ b.) $y = -1$

29. a.) D: $(-\infty, 2]$

R: $(-\infty, 4]$

b.) function

30. $f(-3) = 35$

31. $\{(x, y) \mid 2x + 3y = 6\}$

32. $(-1, 3)$

33. $(-2, 2)$

34. Sweater: \$12; Shirt: \$10

35. 30 milliliters of the 10% solution with
20 milliliters of the 60% solution

36. $63x^7y^{10}$

37. $-\frac{y^3}{8x^9}$

38. $\frac{9y^{16}}{x^6}$

39. $7x^3 - 3x^2 - 5x + 2$

40. $-15a^4b^3 + 10a^3b^5 - 35a^3b^6$

41. $x^3 - 7x^2 + 14x - 8$

42. $15x^2 + 23xy - 28y^2$

43. $9x^2 - 64$

44. $4x^2 - 20x + 25$

45. $3x^2 - x - 4$

46. $3x + 2 - \frac{2}{x-1}$

47. $(x-3)(x+2)(x-2)$

48. $3(x+7)(x+3)$

49. $(3x-4)(2x-3)$

50. $2x(3x+2)(3x-2)$

51. Prime

52. $x = 0, x = -\frac{1}{2}$

53. $x = -7, x = 8$

54. $x = \frac{3}{2}, x = -\frac{5}{3}$

55. 30 miles