Algebra 1 CC - Midterm Review

1. What is the value of x is the solution of $8x - 5 = 5x + 22$?

2. When $4f^2 - 3f + 2$ is subtracted from $2f^2 + 5f - 1$, the difference is

3. What is the largest integer value of x in the solution set of the inequality $-3x + 7 > 22$?

4. Given the function and point below, solve for the missing value k.

   $3x - 2y = 7$; $(k, 4)$

5. The cost of Snow Tubing at Mount Snow is modeled by the function

   $C(n) = 1.25n + 9$, where n is the number of times you ride the lift up to tube down the mountain.

   Based on this model, which statement is true?
   1. You can rent a tube and ride as many times as you would like for $10.25.
   2. Tube rental costs $0 and $1.25 per trip up to 9 trips.
   3. Tube rental costs $9 and each trip up the mountain costs $1.25.
   4. Tube rental costs $1.25 and each trip up the mountain costs $9.

6. $4dx + e = f$

   Solve for x in terms of d, e and f.
   Solve for d in terms of x, e and f.
   Solve for e in terms of x, d and f.

7. Mrs. Krull wrote "Four more than seven times a number is less than seventeen" on the board. If *m* represents the number, write an inequality to translate this statement.

8. Put these numbers in order from largest to smallest. 3.13, $\dfrac{23}{7}$, π, $\sqrt{9.3}$

9. State if each set of ordered pairs is or is *not* a function? Explain each answer.

   (a) {(4,1), (3,1), (2,2), (4,2)}   (c) {(2,2), (4,4), (5,5), (6,6)}

   (e) {(5,1), (6,1), (6,1), (7,1)}   (d) {(1,0), (2,1), (3,2), (4,3)}

10. What is the product of $-2xy^2$ and $\left(3x^2y + xy^2\right)$

11. Solve for x. $4x - 7 + 2x = 5x + 9$

12. Circle all of the graphs that represent functions? Explain how you know.
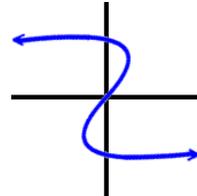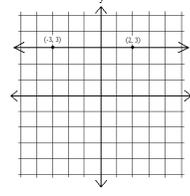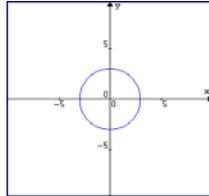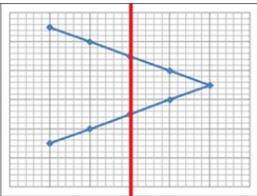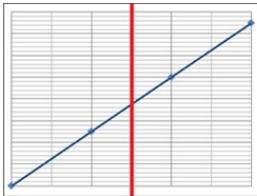
13. What is the slope of the line that passes through the points (2,-5) and (3,-7)?

14. What operation would be done first when simplifying $12[4 + 5^2(3+2) - 14] + 6$

15. Given the function $f(x) = x^2 + 4x$. Evaluate the function at f(-3).

16. What is the difference between an algebraic expression and an algebraic equation? Give an example of each.

17. Determine if each coordinate point is in the solution set for the following system of inequalities?

$y \leq 2x - 1$
$y > -x + 3$

(3,0)
(5,3)
(0,7)
(-5,-2)

18. What is one third of 3^5?
What is one fourth of 4^7?
What is one fifth of 5^3?

19. Give an example of the associative property.
Give an example of the distributive property.
Give an example of the commutative property.
Give an example of the additive property of equality.
Give an example of the multiplicative property of equality.

20. Which type of function is represented by each graph shown below?
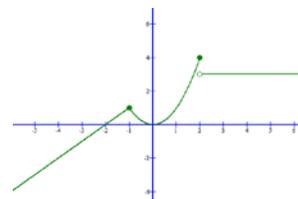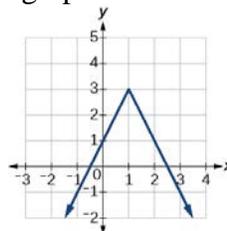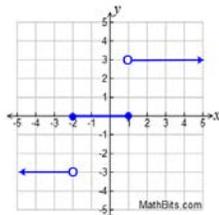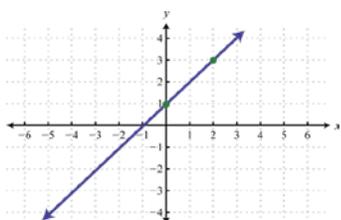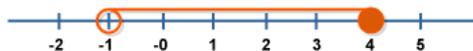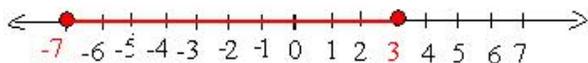
21. Which of the following statements is *not* true about the equation,
$-3x - 4y = 5$

        (A)   The slope is negative   (C)   The y-intercept is positive.

        (B)   The slope is positive   (D)   Passes through the point (4,1)

22. Simplify $\dfrac{15x^6 - 5x^4 + 30x^3}{5x^3}$

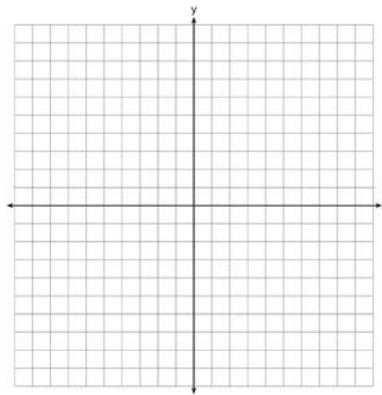23. Describe each inequality in interval notation.

24. Solve the inequality $-4(x+3) \geq -28$ algebraically for x.

25. Determine which of the following are equations and which are expressions. Solve the equations that you find.
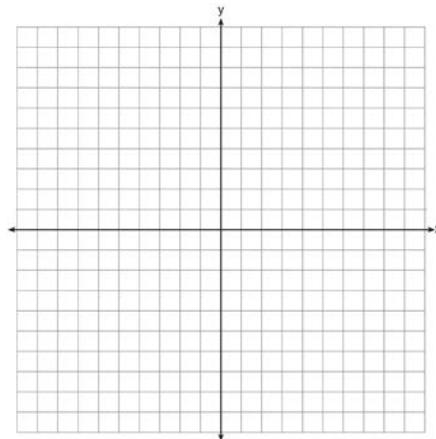
      1. $3x = 9$
      2. $2x - 7 + 5y$
      3. $3(x - 4) + 2 = 11$
      4. $5x + 7 = 3x - 5$
      5. $3x^3 - 2x + 5 - 2x^2$

26. On the set of axes below, draw the graph of the equation $y = -\dfrac{2}{5}x + 1$.
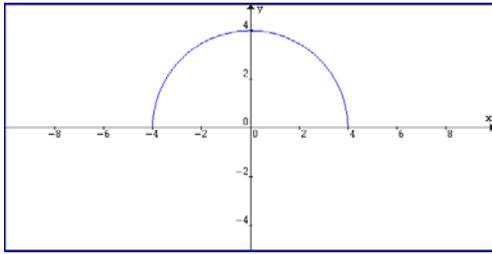
Is the point (5,-1) a solution to the equation? Explain your answer based on the graph drawn.

27. Graph the function $y = -|x + 5|$ on the set of axes below.

Over what interval is the graph decreasing?

28. Find the **domain** and **range** of the function graphed below.

29. Ms. Gustafson shrunk an answer key on a copy machine. She shrunk it twice. The table
   below shows the area of the page after she shrunk it each time.

Shrunken Page	0	1	2
Area in Square Inches	93.5	23.38	5.84

   To the *nearest tenth* what is the average rate of change of the area from the original answer key to
the second shrunken answer key.

30. The graph below is for a cleaning company. Describe the features of the graph. Describe the
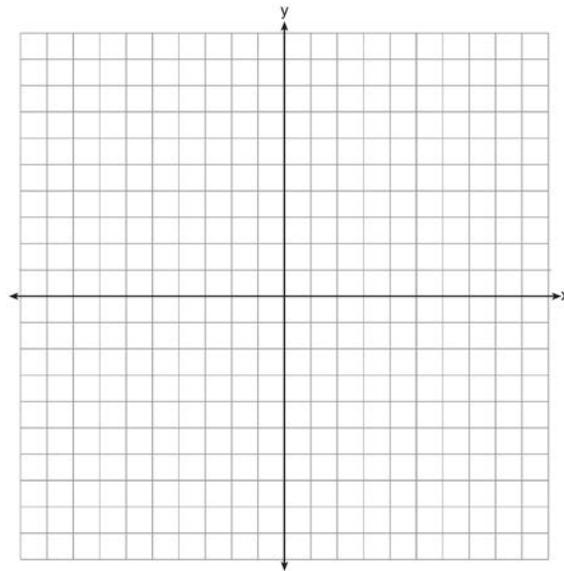structure of the charges for cleaning.
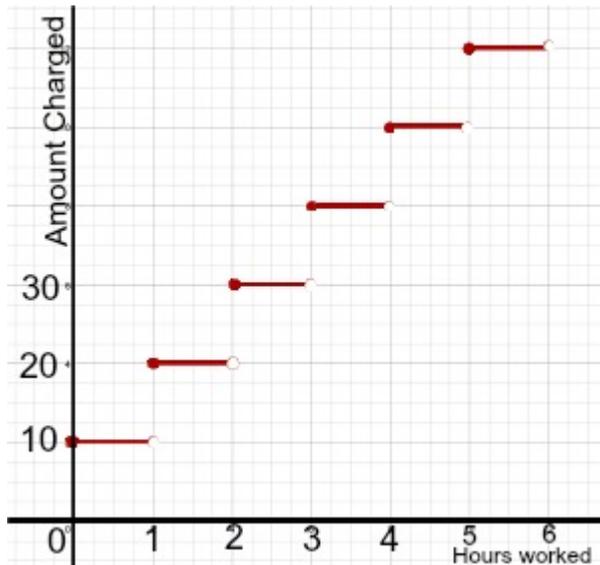
31. Given $3x + bx + 4 < 2$, determine the smallest integer value of b when $x = -2$.

32. Write an equation that defines $m(x)$ as a trinomial where $m(x) = (2x-1)(4-x) + 3x^2 + 17$

Use your trinomial to evaluate $m(-3)$

33. On the set of axes below, graph the following inequality:

$$2y - 5 < 8x + 7$$

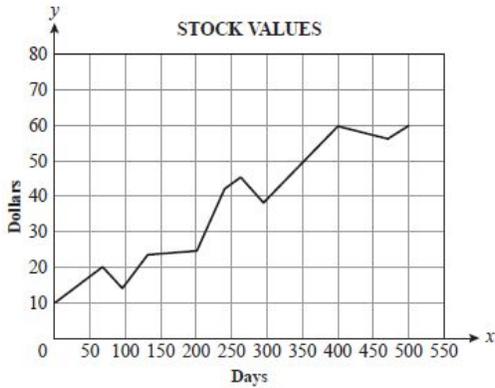

Is the point (2, 3) a solution to the Inequality? Explain your answer based on the graph drawn.

34. Solve, graph and describe the solution set in interval notation of the following compound inequality.

$-3d + 2 \geq -1$ or $5d - 22 > 13$

35. The graph below represents the value of a certain stock over a 500 day period.
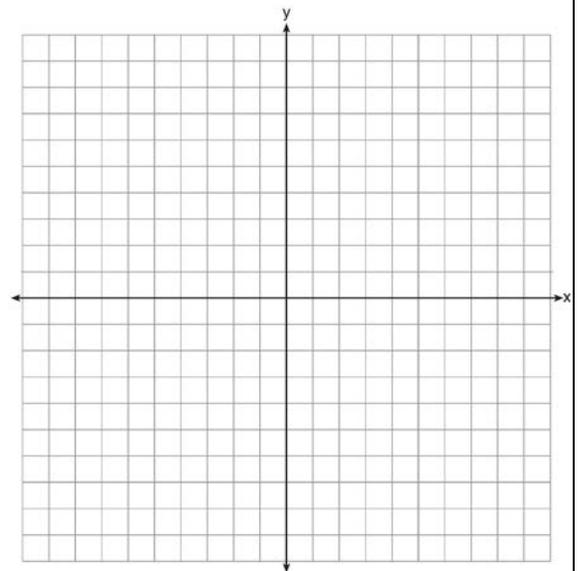

Describe what is happening to the stock during the 75 – 100 day interval?

Describe what is happening to the stock during the 300 – 400 day interval?

Describe what is happening to the stock during the 125 – 200 day interval?

36. On the set of axes below, graph the following Piecewise Function:

$$f(x) = \begin{cases} -x+1 & -4 \le x \le -1 \\ 2 & -1 \le x \le 3 \\ 2x-4 & 3 \le x \le 7 \end{cases}$$

37. Old Lady Gustafson is crocheting a blanket. After 7 minutes she realizes she has crocheted 12 rows and after 10 minutes she has crocheted 18 rows.

    (a) Express the information given in this problem as two coordinate pairs, (t, r), where t is the number of minutes and r is the number of rows she has crocheted.

    (b) Find the slope of the line that passes through these two points. What are its units?

    (c) Find the equation of the line that passes through the two points in $r = mt + b$.

    (d) How many rows will be completed after 1 hour?

    (e) If the blanket will be completed once there are 200 rows crocheted, how many minutes will it take Old Lady Gustafson to complete the blanket?