

Name the slope, x-intercept and y-intercept:

1. $3y - 4x = 24$

$m = \frac{4}{3}$

$b = 8$

$x = -6$

3. $3x = 4x + 2$

$x = -2$

$m = \text{undefined}$

$b = \emptyset$

2. $\frac{1}{3}x + 3y = 8$

$m = -\frac{1}{9}$

$b = \frac{8}{3}$

$x = 24$

4. $5x + 10y - 20 = 0$

$y = -\frac{1}{2}x + 2$

$m = -\frac{1}{2}, b = 2, x = 4$

Determine if the following are parallel, perpendicular or neither:

5. $\begin{cases} y = \frac{2}{7}x + 3 \\ 4x - 14y = 7 \end{cases}$

||

6. $\begin{cases} 3x + 7y = 42 \\ -14x + 6y = 12 \end{cases}$

\perp $y = \frac{14}{6}(\frac{7}{3})$

7. $\begin{cases} y = \frac{3}{5}x + 7 \\ -5x = -3y + 10 \end{cases}$

$\frac{5}{3}$

Write an equation for a line:

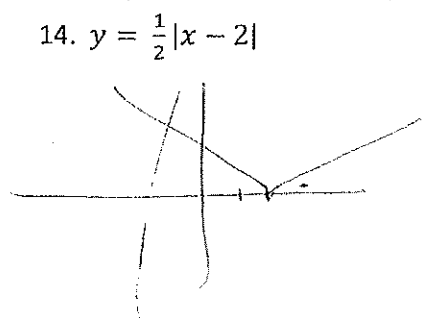
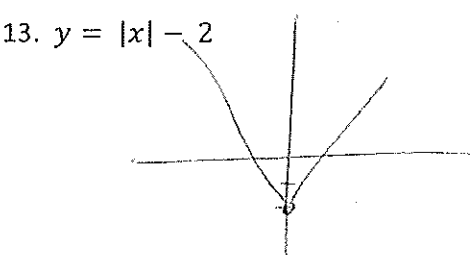
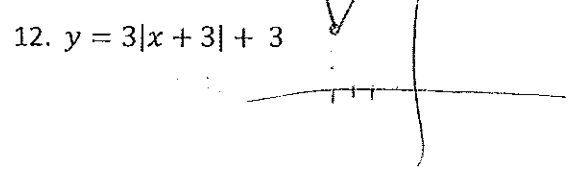
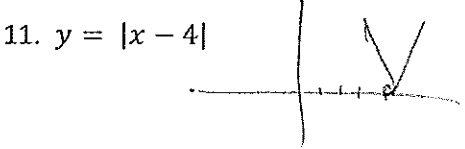
8. contains (4, -5) and has a slope of -6 $y = -6x + 19$

Went over class

9. contains (2, -4) and is perpendicular to the x-axis $x = 2$

10. contains (-1, 4) and (-5, -4) $m = \frac{-4-4}{-5-(-1)} = \frac{-8}{-4} = 2$
 $m = 2$ $y = 2x + 6$

Describe, and graph, the translation of the equations below from the parent graph $y = |x|$



2

Algebra Review

Simplify the following-

1. $4 + 8(4) \div 2 - 10$ 10

2. $\frac{3 \cdot 5 + 3^2}{2^3}$ 3

3. $5 \cdot 7 - 2(5+1) \div 3$
31

4. $15 \div 3 \times 5 + 1$ 26

Solve the following equations.

5. $6 = \frac{3x-6}{3}$ 8 $6 = x - 2$

6. $8x - 3 = 5(2x + 1)$ -4

7. $\frac{1}{3}(3x-1) = \frac{1}{2}(x+2)$ $\frac{8}{3}$

8. $4x + 4 + 7 = x + 17$
 $4(x+1) + 7 = x + 17$
 $x = 2$

9. $-2|2x+3| = 34$
 \emptyset

10. $|2x+4| - 3 = 6x+1$
 $x=0, x=-1$
doesn't work

Solve and graph the following inequalities.

11. $2(5-3x) < x-4(3-x)$
 $x > 2$

12. $5 \leq 9-4x \leq 13$
 $1 \geq x$
 $x \geq -1$
 $-1 \leq x \leq 1$

→ 13. $\frac{2}{5}|3x-3| - 4 > 2$
 $x > 6$ $x < -4$

14. $|4x| + 3 \leq 0$
 \emptyset

12. $5 \leq 9-4x \leq 13$
 $-9 \quad -9 \quad -9$

$-\frac{4}{-4} \leq \frac{-4x}{-4} \leq \frac{4}{-4}$

$-1 \geq x \quad x \geq -1$

$-1 \geq x \geq -1$

Key

Perform the indicated operations:

1. $(7 \begin{bmatrix} 2 & 8 \\ -4 & 1 \end{bmatrix} + 3 \begin{bmatrix} -5 & 1 \\ 2 & -6 \end{bmatrix}) \begin{bmatrix} 1 & 4 & 7 \\ -3 & -1 & -5 \end{bmatrix}$

$$\begin{bmatrix} 14 & 56 \\ -28 & 7 \end{bmatrix}$$

$$\begin{bmatrix} -15 & 3 \\ 6 & -18 \end{bmatrix}$$

$$\begin{bmatrix} -1 & 59 \\ -22 & -11 \end{bmatrix}$$

$$\begin{bmatrix} -178 & -63 & -302 \\ 11 & -17 & -99 \end{bmatrix}$$

2. $\begin{bmatrix} 4 & 0 \\ 5 & 3 \\ 2 & -1 \end{bmatrix} \begin{bmatrix} 6 & 8 \\ 3 & -6 \end{bmatrix} + \frac{1}{2} \begin{bmatrix} 2 & 4 \\ -3 & 6 \\ -4 & 5 \end{bmatrix}$

$$\begin{bmatrix} 24 & 32 \\ 39 & 22 \\ 9 & 22 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 2 \\ -3/2 & 3 \\ -2 & 5/2 \end{bmatrix}$$

$$\begin{bmatrix} 25 & 34 \\ 37.5 & 25 \\ 7 & 24.5 \end{bmatrix}$$

3. Find the value of x and y:

$$\begin{cases} 4x - 3y = 44 \\ 7x + 9y = -37 \end{cases}$$

$$\begin{bmatrix} 4 & -3 & 44 \\ 7 & 9 & -37 \end{bmatrix}$$

$$\text{rref} = \begin{bmatrix} 1 & 0 & 5 \\ 0 & 1 & -8 \end{bmatrix}$$

Find the determinant of the following:

4. $\begin{vmatrix} 3 & -4 \\ -5 & 7 \end{vmatrix}$

(1)

5. $\begin{vmatrix} 2 & 3 & 4 \\ -5 & 1 & 6 \\ 6 & 5 & 7 \end{vmatrix}$

(43)

Solve the following:

6. $\begin{cases} x - 2y + 3z = 3 \\ 2x + y + 5z = 8 \\ 3x - y - 3z = -22 \end{cases}$

$$\begin{bmatrix} 1 & -2 & 3 & 3 \\ 2 & 1 & 5 & 8 \\ 3 & -1 & -3 & -22 \end{bmatrix}$$

$$\begin{bmatrix} -11 & 0 & 23 \\ -2 & 0 & 34 \\ 5 & 0 & 23 \end{bmatrix} \begin{bmatrix} -4 \\ 1 \\ 3 \end{bmatrix}$$

7. $\begin{cases} 3x + 10y = 16 \\ x = -6y \\ x + 6y = 0 \end{cases}$

$$\begin{bmatrix} 3 & 10 & 16 \\ 1 & 6 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 12 \\ -2 \end{bmatrix} \Rightarrow (12, -2)$$

8. $\begin{cases} 7y = 3x - 15 \\ 3x + 2y = 15 \end{cases}$

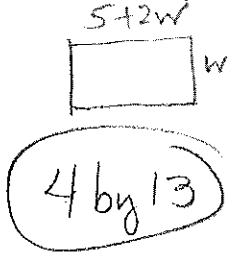
$$\begin{aligned} -3x + 7y &= -15 \\ 3x + 2y &= 15 \\ \hline 9y &= 0 \end{aligned}$$

$$y = 0$$

$$0 = 3x - 15 \Rightarrow x = 5$$

$$(5, 0)$$

9. The length of a rectangle is 5 cm more than twice the width. The perimeter of the rectangle is 34 cm. Find the dimensions of the rectangle.



$$2(w+5+2w) = 34$$

$$2(3w+5)$$

$$6w+10 = 34$$

$$6w = 24$$

$$w = 4$$

$$5 + 2(4)$$

$$5 + 8$$

$$13$$

$$\begin{array}{r} 4 \\ +13 \\ \hline 17 \\ \times 2 \\ \hline 34 \end{array}$$

10. Your school sold 456 tickets for a high school play. An adult ticket cost \$3.50. A student ticket cost \$1. Total ticket sales equaled \$1131. How many of each type of ticket was sold?

$$A + S = 456$$

$$- 3.5A + 1S = 1131$$

$$-2.5A = -675$$

$$A = 270$$

$$S = 186$$

11. One shopper bought 3 pounds of butter, 4 pounds of cheese and 2 loaves of bread for \$12.99. A second shopper bought 2 pounds of the same brand of butter, 3 pounds of the same brand of cheese, and 3 loaves of the same brand of bread for \$10.21. A third shopper bought 4 pounds of butter, 2 pounds of cheese, and 4 loaves of bread for \$11.90. Find the cost of one pound of butter, one pound of cheese, and one loaf of bread.

$$\begin{cases} 3B + 4C + 2Br = 12.99 \\ 2B + 3C + 3Br = 10.21 \\ 4B + 2C + 4Br = 11.90 \end{cases}$$

$$B = 1.49$$

$$C = 1.85$$

$$Br = 0.56$$

12. Find the area of the triangle with vertices: $(-2, -3)$, $(-5, 4)$, and $(3, 2)$.

$$\frac{1}{2} \begin{vmatrix} -2 & -3 & 1 \\ -5 & 4 & 1 \\ 3 & 2 & 1 \end{vmatrix} \quad \frac{1}{2}(-50) = 25$$

Choose the best answer for the following:

If $f(x) = x^2 + x$ and $g(x) = x - 1$, what is $f(g(x))$?

- A. $x^2 + x$
- B. $x^2 - x$**
- C. $x^2 - 3x + 1$
- D. $x^2 + 3x + 1$

2. Solve $3|7 - 2x| + 5 \geq 11$ *isolate | |*

$|7 - 2x| \geq 2$

$7 - 2x \geq 2$ *or* $7 - 2x \leq -2$

- A. $x \leq \frac{5}{2}$
- B. $x \geq \frac{9}{2}$
- C. $x \leq \frac{5}{2}$ and $x \geq \frac{9}{2}$
- D. $x \leq \frac{5}{2}$ or $x \geq \frac{9}{2}$**

3. Simplify $\frac{1}{2}(8x - 4) - 3(2x + 5)$

$4x - 2 - 6x - 15$

- A. $-2x - 17$**
- B. $10x + 3$
- C. $-2x + 1$
- D. $-2x - 10$

4. Solve $4(2x - 9) = 3x + 4$

$8x - 36 = 3x + 4$
 $5x = 40$

- A. -32
- B. $-\frac{32}{5}$
- C. $\frac{40}{3}$
- D. 8**

5. Give the domain of $h = \{(-1, 4), (2, 7), (3, 7)\}$. Tell if h is a function.

- A. $\{4, 7\}$; h is a function
- B. $\{4, 7\}$; h is NOT a function
- C. $\{-1, 2, 3\}$; h is a function**
- D. $\{-1, 2, 3\}$; h is NOT a function

6. If $g(x) = \frac{x^2 - 6x + 3}{x + 4}$, find $g(-2)$

$\frac{4 + 12 + 3}{-2 + 4} = \frac{19}{2}$

- A. $-\frac{17}{2}$
- B. $\frac{19}{2}$**
- C. $\frac{17}{2}$
- D. $\frac{39}{2}$

4.75
 -2 1st hr
 2.75 2 hrs
 -1 3 hrs

7. A parking garage charges \$2 for the first hour and \$1 for each additional hour. Fran has \$4.75 to spend for parking. What is the greatest number of hours Fran can park?

- A. 3**
- B. 5
- C. 6
- D. 7

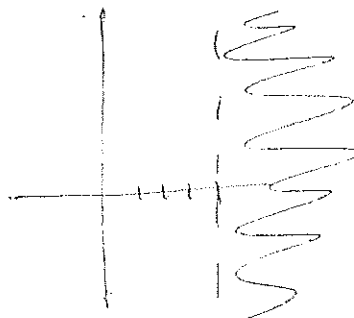
4.75
 -2 (1 hr)
 2.75
 -2 (2 hrs)

8. Which equation could be used to solve the following problem? 55 minus 3 times a number is 22. Find the number.

- A. $n(55 - 3) = 22$
- B. $3n - 22 = 55$
- C. $55n - 3 = 22$
- D. $55 - 3n = 22$**

9. Which description identifies the inequality $x > 4$?

- A. a dashed vertical line at 4, shaded to the left of the line
- B. a dashed horizontal line at 4, shaded above the line
- C. a dashed vertical line at 4, shaded to the right of the line**
- D. a dashed horizontal line at 4, shaded below the line



only factor, not solve (6)

Factor completely:

30. $x^2 + 11x + 18$
 $(x+2)(x+9)$

31. $x^2 + 7x + 10$
 $(x+5)(x+2)$

32. $x^2 + 10x + 25$
 $(x+5)^2$

33. $2x^2 + 7x + 5$
 $-x - = 10$
 $5 + 2 = 7$
 $2x^2 + 2x + 5x + 5$
 $2x(x+1) + 5(x+1)$
 $(2x+5)(x+1)$

34. $4x^2 + 13x + 3$
 $-x - = 12$
 $12 + 1 = 13$
 $4x^2 + 12x + 1x + 3$
 $4x(x+3) + 1(x+3)$
 $(4x+1)(x+3)$

35. $3x^2 + 9x + 6$
 $3(x^2 + 3x + 2)$
 $3(x+1)(x+2)$

36. $x^2 - 13x + 42$
 $(x-6)(x-7)$

37. $x^2 - x - 20$
 $(x-5)(x+4)$

38. $x^2 + 2x - 3$
 $(x+3)(x-1)$

39. $x^2 - 16$
 $(x-4)(x+4)$

40. $x^2 - 49$
 $(x-7)(x+7)$

41. $x^2 - y^2$
 $(x-y)(x+y)$

42. $4x^4 - 4x^2$
 $4x^2(x-1)$
 $4x^2(x-1)(x+1)$

43. $3x^3 + 9x^2 - 30x$
 $3x(x^2 + 3x - 10)$
 $3x(x+5)(x-2)$

44. $5x^5 - x^4 - 6x^3$
 $x^3(5x^2 - x - 6)$
 $5x^2 - 6x + 5x - 6$
 $x(5x-6) + 1(5x-6)$
 $x^3(x+1)(5x-6)$