Simplify all answers and show your work! You may use MathGV as a tool.

1. Lines that are parallel have the same _slope_.

2. In the linear equation $4x - 9y = 36$, what is the x-intercept? ____(9, 0)___ y-intercept? ____(0, –4)___

3. In the equation $2x + 7y = 18$, what is the value of the slope? \[ \frac{2}{7} \]

4. In the equation $Ax + By = C$, what is the value of the slope? \[ \frac{-A}{B} \]

Find the equations of the lines with the given properties:

5. Passing through points (4, –7) and (1, –9).

   \[ 2x - 3y = 29 \]

6. Passing through (4, 2) and having a slope of \( \frac{7}{5} \).

   \[ 7x - 5y = 18 \]

7. Solve for x: $3(x - 6) = 4(x + 5) - 2x$

   \[ x = 38 \]

8. If \( f(x) = \frac{8x - 1}{3} \), find the inverse \( (f^{-1}(x)) \).

   \[ f^{-1}(x) = \frac{3x + 1}{8} \]

9. Graph the following system of equations.

   \[ \begin{cases} 
   y = 3x + 4 \\
   y = \frac{1}{2}x - 1 
   \end{cases} \]

   and find the point of intersection. \( (-3, 2) \) \( (-2, -2) \)

10. Solve the system of equations:

    \[ \begin{cases} 
    4x + 3y = -6 \\
    x - 6y = -15 
    \end{cases} \]

    \( (-3, 2) \)

Determine if the following pairs of lines cross in one point, are parallel, or are the same line.

11. \[ \begin{cases} 
    2x - 3y = 27 \\
    -4x + 6y = 51 
    \end{cases} \]

    parallel

12. \[ \begin{cases} 
    5x + 4y = 1 \\
    15x + 12y = 3 
    \end{cases} \]

    same line

13. \[ \begin{cases} 
    12x - 9y = 34 \\
    9x - 6y = 12 
    \end{cases} \]

    cross in 1 point
14. A transmission replacement at Brian’s Auto Shop costs $1500 for parts and $69 per hour for labor. If C(x) represents the cost of the entire job after the technician has worked on the car for x hours, find the following:

a) How much would the entire job cost if the technician spent 6 hours on the job? 
   $1914

b) How much would just the materials cost if you did the job yourself? 
   $1500

c) What is the rate of change of the cost per hour? 
   $69 per hour

d) Find the equation C(x). 
   \[ C(x) = 69x + 1500 \]

15. In 2000, there were 124 million internet users in the U.S. In 2008, there were 220 million internet users in the U.S. Assume the number of internet users in the U.S. increases linearly over time and let f(x) represent the number of millions of internet users in the U.S. “x” years after 2000. Find the following:

a) Find the rate of change of millions of dollars per year. 
   12 million people per year

b) Find the equation f(x). 
   \[ f(x) = 12x + 124 \]

c) How many internet users in the U.S. are anticipated in the year 2012? 
   268 million

16. The revenue in billions of dollars for a hardware chain is given by the equation \( R(x) = 4.5x + 13.7 \), where x is the number of years after 1995.

a) What is the x value for 1995? 
   \( x = 0 \)

b) What was the revenue of the store in 1995? 
   $13.7 billion

c) What is the expected revenue of the store in the year 2010? 
   $81.2 billion

d) Is the revenue of the store increasing or decreasing as the years go by? 
   increasing

e) By how much is the revenue of the store changing each year? 
   by $4.5 billion

17. Anneka has priced train tickets and found that three adult tickets and four child tickets cost a total of $159. She also found that two adult tickets and three child tickets cost $112. How much does one child’s ticket cost? 

\$18