**Investigation: Solutions to Systems of Equations**

1. Are the following points solutions to \( y = 3x - 1 \)? Explain how you know. (Hint: plug the values for \( x \) and \( y \) into the equation)
   
   \((1, 2)\):

   \((2, 5)\):

**Graph the line \( y = 3x - 1 \) and then answer the questions below.**

2. Do the points \((1, 2)\) and \((2, 5)\) lie directly on the line you graphed of \( y = 3x - 1 \)?

3. Choose a different point on the line \( y = 3x - 1 \) by looking at the graph. Prove algebraically, by plugging in the values for \( x \) and \( y \), that the point you chose is a solution to the line \( y = 3x - 1 \).

4. Based on your answers in #1, #2 and #3, where on the coordinate plane do you think all of the solutions to \( y = 3x - 1 \) will lie? On the line, above the line, or below the line?

5. List one more solution to the equation \( y = 3x - 1 \) by looking at the graph and using your conjecture from #4.

**Now graph \( y = -2x + 4 \) on the same coordinate plane above.**

7. List two solutions to \( y = -2x + 4 \) by looking at the graph and using your conjecture from #4.

8. Do the lines \( y = -2x + 4 \) and \( y = 3x - 1 \) have any points in common? If so, list them here.

9. Is the point you listed in #8 a solution to both of the equations \( y = -2x + 4 \) and \( y = 3x - 1 \)? Explain how you know.

10. Summarize how you can find a solution that satisfies two linear equations simultaneously, by looking at their graphs.
A. Write the solution to each system of equations.

1. Solution: 

2. Solution: 

B. Solve each system of equations by graphing.

\[ y = \frac{1}{2}x - 4 \]
\[ y = -x + 2 \]

\[ y = -\frac{2}{3}x + 2 \]
\[ y = 2x - 6 \]

3. Solution: 

4. Solution: 