Graph the function

\[ y = |2x - 1| + |3 - x| + |x + 2| \]

and solve the inequality

\[ y < 2 - x. \]

**Solution:**

Since \( 2x - 1 = 0 \) for \( x = \frac{1}{2} \), \( 3 - x = 0 \) for \( x = 3 \), and \( x + 2 = 0 \) for \( x = -2 \), we consider the following four cases:

**Case 1: \( x \in (-\infty, -2] \)**

Then \( |2x - 1| = 1 - 2x \), \( |3 - x| = 3 - x \), and \( |x + 2| = -x - 2 \) and

\[ y = 1 - 2x + 3 - x - 2 = -4x + 2. \]

**Case 2: \( x \in \left[-2, \frac{1}{2}\right] \)**

Then \( |2x - 1| = 1 - 2x \), \( |3 - x| = 3 - x \), and \( |x + 2| = x + 2 \) and

\[ y = 1 - 2x + 3 - x + x + 2 = -2x + 6. \]

**Case 3: \( x \in \left[\frac{1}{2}, 3\right] \)**

Then \( |2x - 1| = 2x - 1 \), \( |3 - x| = 3 - x \), and \( |x + 2| = x + 2 \) and

\[ y = 2x - 1 + 3 - x + x + 2 = 2x + 4. \]

**Case 4: \( x \in [3, \infty) \)**

Then \( |2x - 1| = 2x - 1 \), \( |3 - x| = x - 3 \), and \( |x + 2| = x + 2 \) and

\[ y = 2x - 1 + x - 3 + x + 2 = 4x - 2. \]
In summary,

\[ y = \begin{cases} 
2 - 4x, & \text{for } x \leq -2 \\
6 - 2x, & \text{for } -2 \leq x \leq \frac{1}{2} \\
2x + 4, & \text{for } \frac{1}{2} \leq x \leq 3 \\
4x - 2, & \text{for } 3 < x 
\end{cases} \]

Graphing, now, \( y \) and \( y_1 := x - 2 \) in the same coordinate system, we see that the graph of \( y_1 \) lies strictly below the graph of \( y \) and thus the inequality \( y < y_1 \) has no solutions.