Solving 3-part Inequalities Using a TI-89

Solve \(-7 < 2x - 5 < 3\)

Algebraically:
\[
\begin{align*}
-7 &< 2x - 5 < 3 \\
-2 &< 2x < 8 \\
-1 &< x < 4 \\
x &\text{is all the values between } -1 \text{ and } 4.
\end{align*}
\]

\((-1, 4)\)

Graphically

Set the viewing window to a standard view.

Graph each part of the inequality.

Diamond \text{ Y=}

(Clear functions)

\[
\begin{align*}
Y1 &= -7 \\
Y2 &= 2x - 5 \\
Y3 &= 3
\end{align*}
\]

Diamond Graph

The solution is the values of \(x\) for which the graph of \(Y2\) is between the graphs of \(Y1\) and \(Y3\).

Find the point of intersection between \(Y1\) and \(Y2\) and between \(Y2\) and \(Y3\).

F5: Math
5 Intersection
1st Curve: Cursor on Y1
Enter
2\textsuperscript{nd} Curve: Cursor on Y2
Enter
Lower Bound: - move cursor to the left of the intersection
Enter
Upper Bound: - move cursor to the right of the intersection
Enter

The intersection is the point (-1, -7).

Repeat the procedure to find the point of intersection between Y2 and Y3.
(Use the down arrow to move the cursor to Y2)

The intersection is the point (4, 3).

The solution is all the \textbf{x-values} between those two points. (-1, 4)