

## Solving 3-part inequalities

$$\text{Solve } -7 < 2x - 5 < 3$$

### Algebraically:

$$-7 < 2x - 5 < 3$$

$$-2 < 2x < 8$$

$$-1 < x < 4$$

x is all the values between -1 and 4.

$$(-1, 4)$$

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### Graphically

$$\text{Solve } -7 < 2x - 5 < 3$$

**Set the viewing window to a standard view.**

Graph each part of the inequality.

**Y=**

(Clear functions)

$$Y1 = -7$$

$$Y2 = 2x - 5$$

$$Y3 = 3$$

**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.

**2<sup>nd</sup> Calc**

**5:Intersect**

**First Curve?**

The first equation appears in the upper left corner

**Enter**

**Second Curve?**

The second equation appears in the upper left corner

**Enter**

**Guess?** Move cursor close to the point of 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 for the first curve)

The intersection is the point  $(4, 3)$ .

**The solution is all the x-values between those two points.  $(-1, 4)$**