

Graph the solution to the following inequality on the number line.

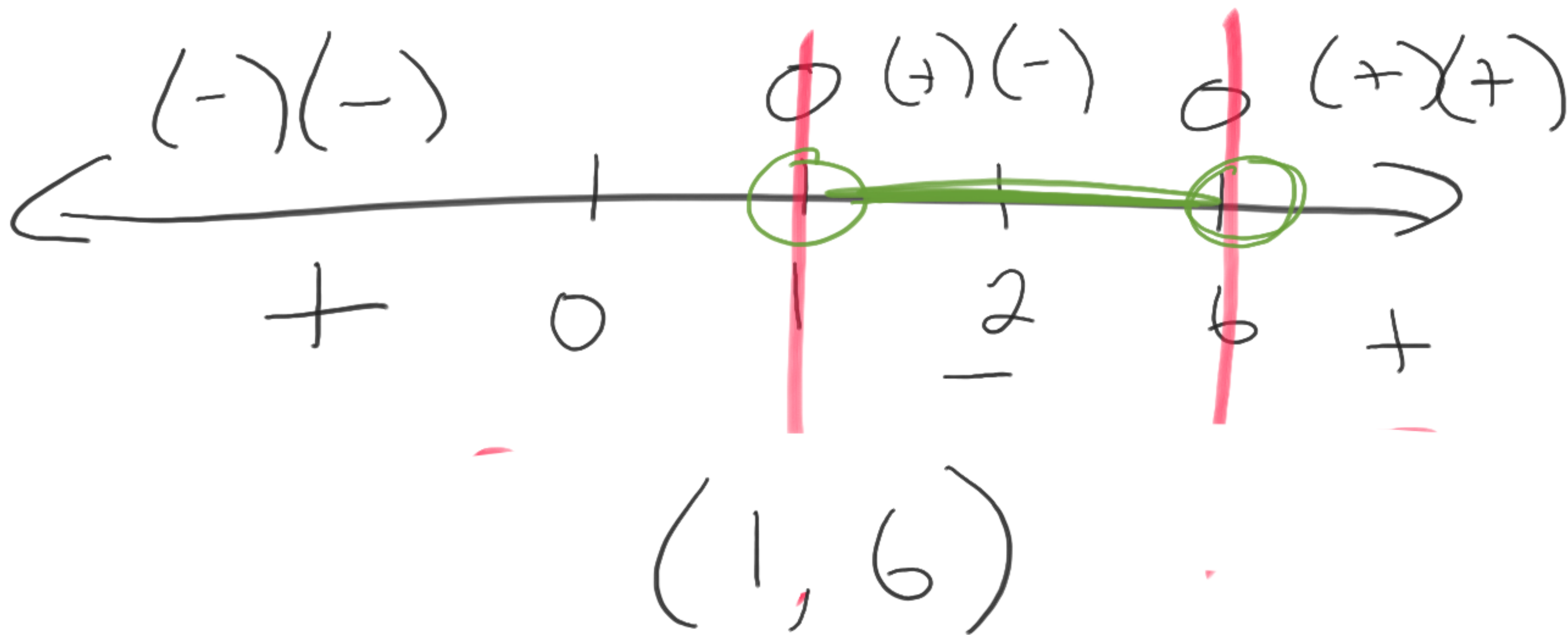
$$(x-1)(x-6) < 0$$

$$x-1 = 0$$

$$x = 1$$

$$x-6 = 0$$

$$x = 6$$



Graph the solution to the following inequality on the number line.

$$\begin{array}{r} x^2 - 2x \geq 8 \\ -8 \quad -5 \\ \hline \end{array}$$

$$x^2 - 2x - 8 \geq 0$$

$$(x - 4)(x + 2) \geq 0$$

$$x = 4$$

$$x = -2$$

(-)(-)

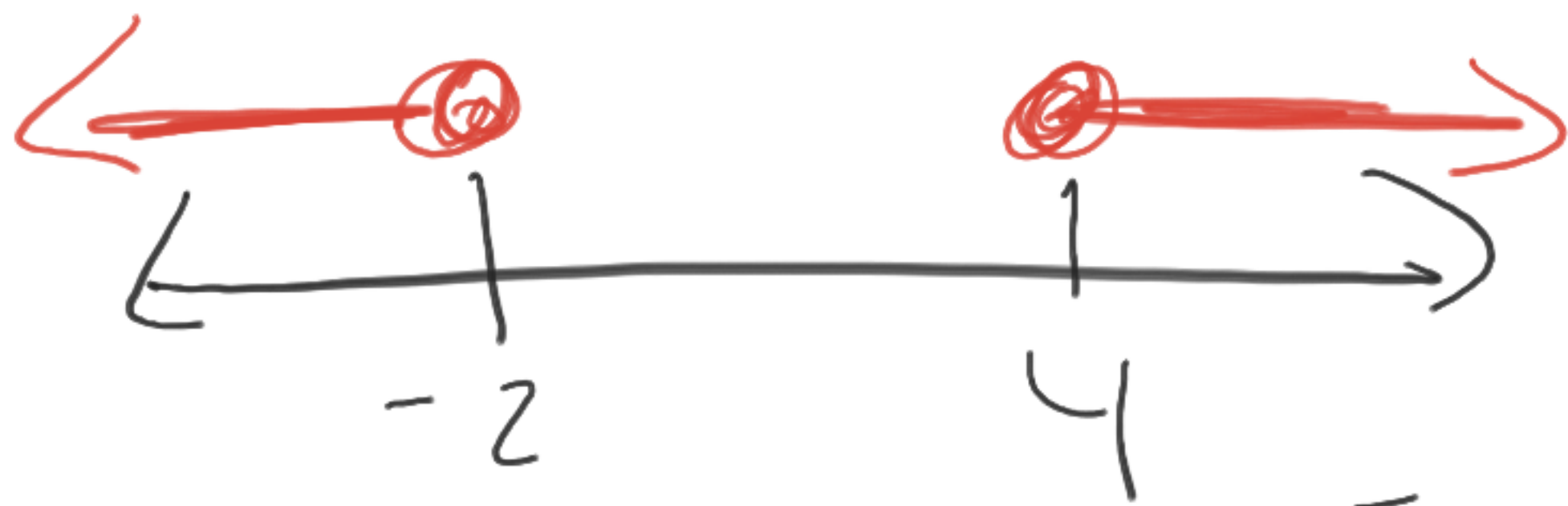
+

(-)(+)

-

(+)(+)

+

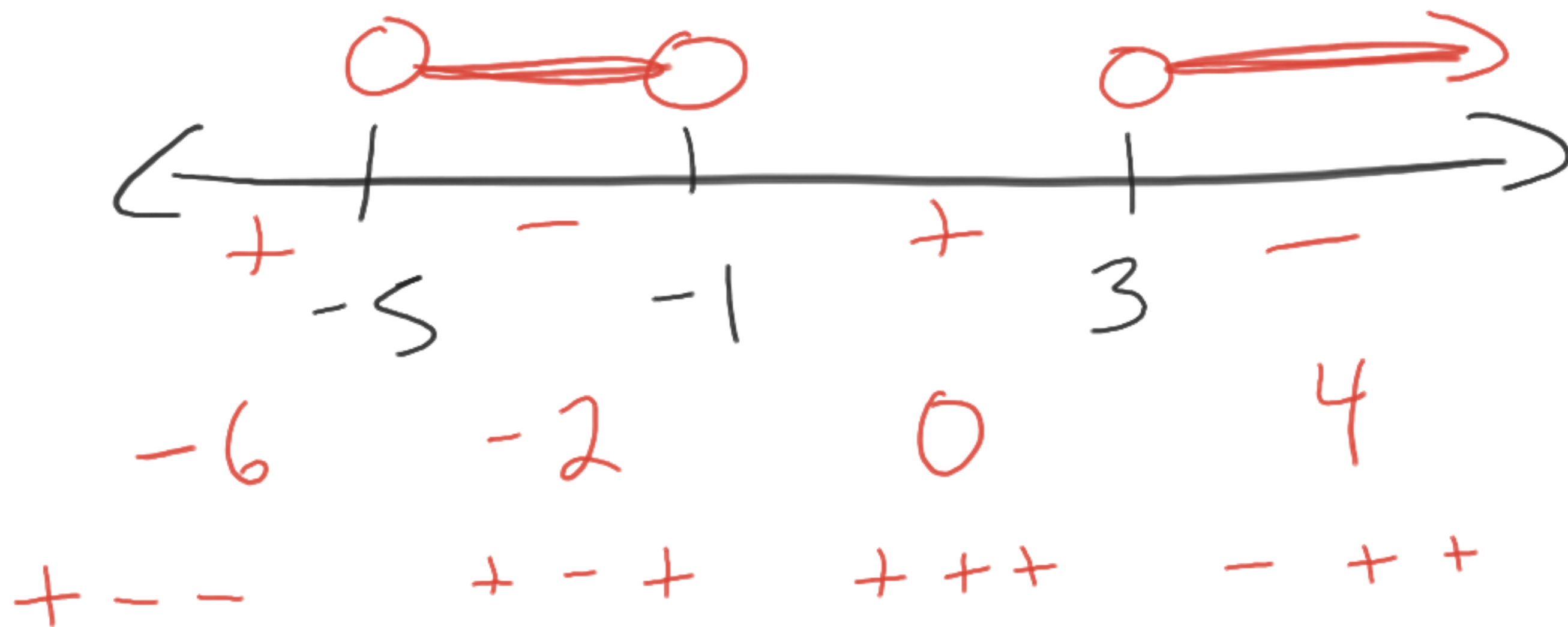


Solve the following inequality.

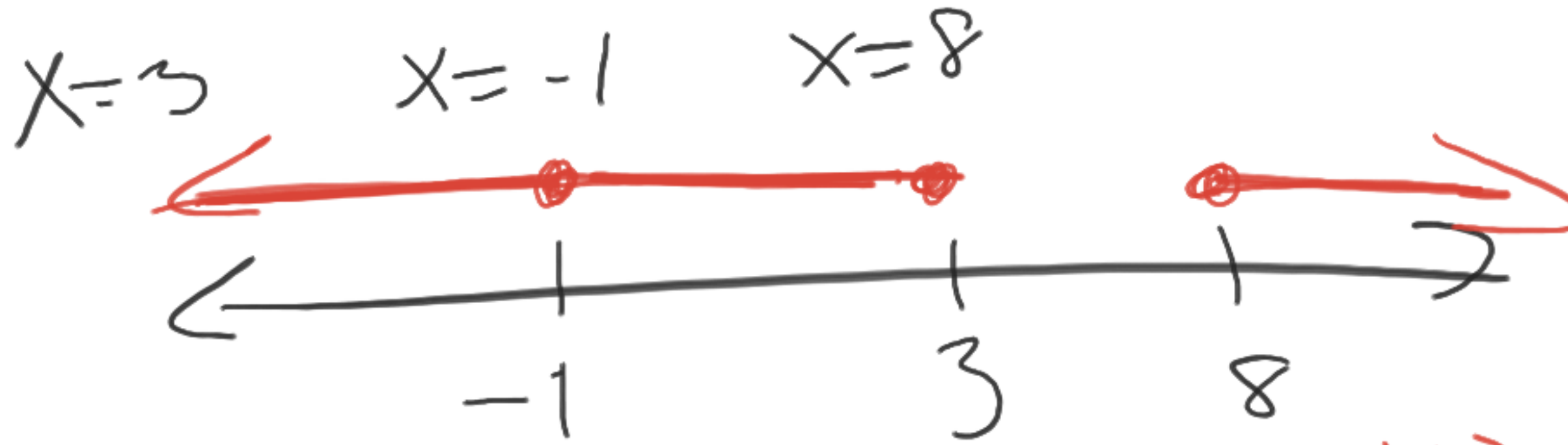
$$(-5, -1) \cup (3, \infty)$$

$$(3-x)(x+1)(x+5) < 0$$

$$x=3 \quad x=-1 \quad x=-5$$



$$(x-3)(x+1)^2(x-8) \geq 0 \quad (-\infty, 3] \cup [8, \infty)$$



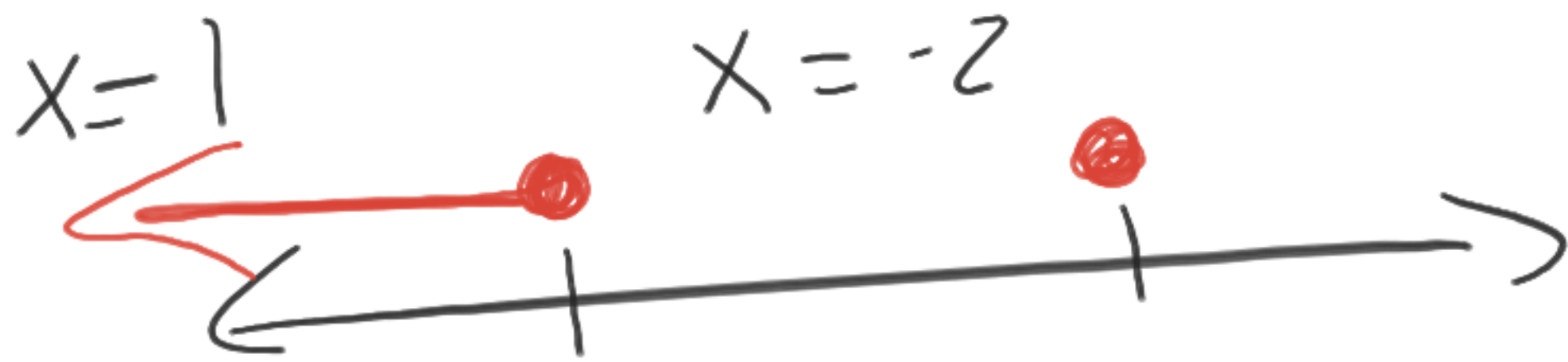
-5
 $(-)(+)(-)$
 $(+)$
 $(-8)(-4)^2(-13)$

0
 $(-)(+)(-)$
 $(+)$

5
 $(+)(+)(-)$
 $(-)$

10
 $(+)(+)(+)$
 $(+)$

$$(x-1)^2 (x+2)^3 \leq 0$$



$$(-\infty, -2] \cup \{1\}$$

$(+)(-)$
-

$(+)(+)$
+

$(+)(+)$
+

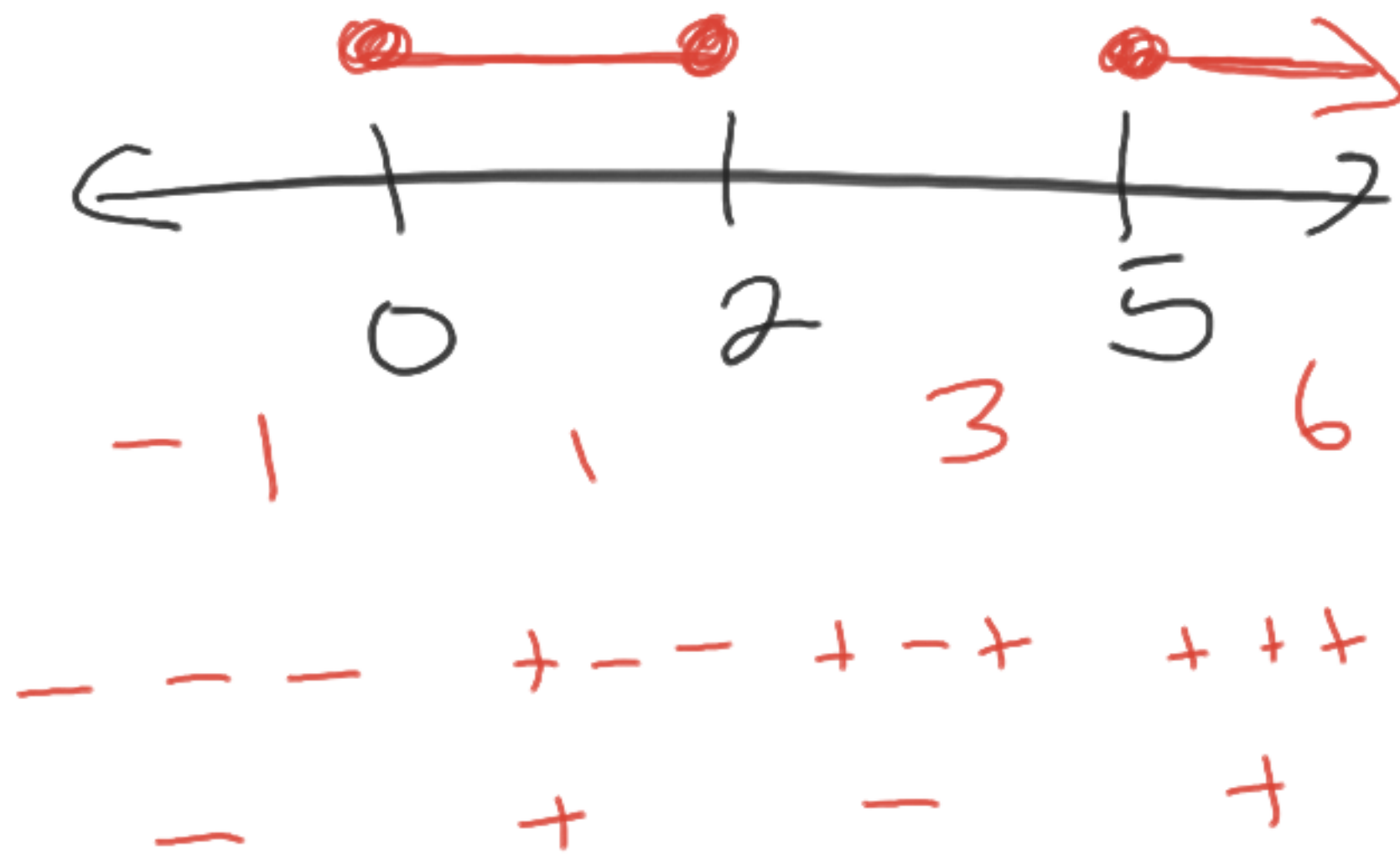
$$x^3 + 10x \geq 7x^2$$

$$x^3 - 7x^2 + 10x \geq 0$$

$$x(x^2 - 7x + 10) \geq 0$$

$$x(x-5)(x-2) \geq 0$$

$$x=0 \quad x=5 \quad x=2$$



$$[0, 2] \cup [5, \infty)$$

$$\frac{-x-1}{x-7} \geq 0$$

$$\begin{aligned} -x-1 &= 0 \\ x &= -1 \end{aligned}$$

$$\begin{aligned} x-7 &= 0 \\ x &= 7 \end{aligned}$$



$$[-1, 7)$$

-2

+
-
⊖

0

-
-
⊕

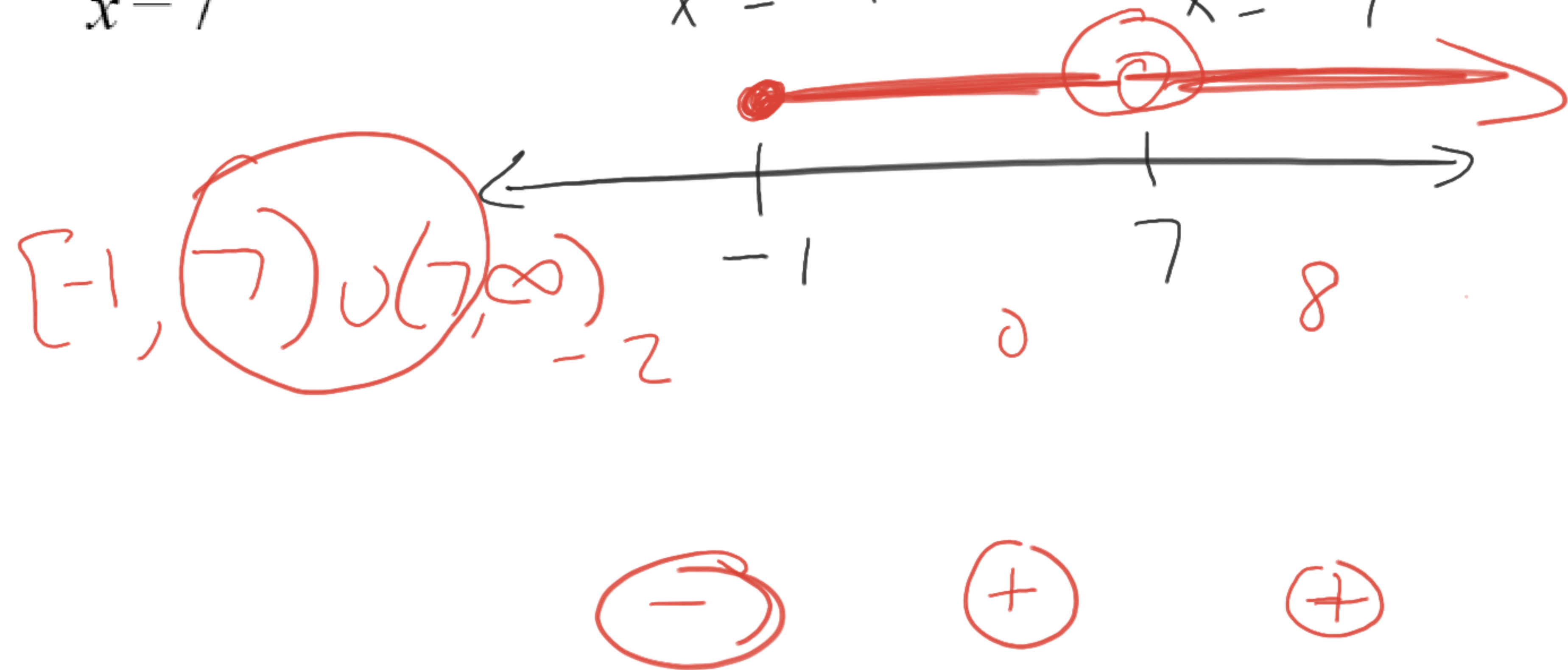
8

-
+
⊖

$$\frac{-x-1}{x-7} \geq 0$$

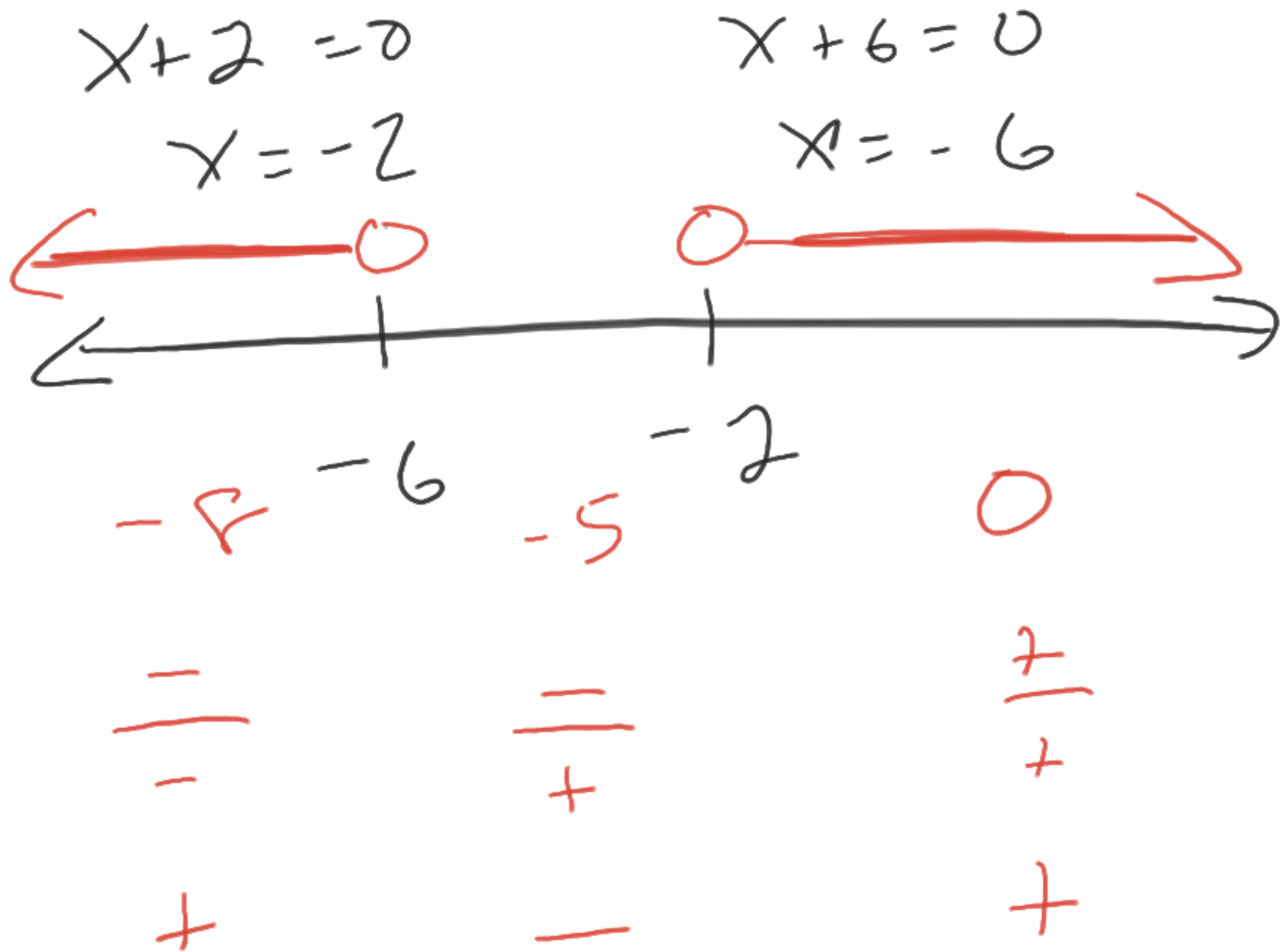
$$\begin{aligned} -x-1 &= 0 \\ x &= -1 \end{aligned}$$

$$\begin{aligned} x-7 &= 0 \\ x &= 7 \end{aligned}$$



$$\frac{x+2}{x+6} > 0$$

$$(-\infty, -6) \cup (-2, \infty)$$



$$\frac{x+3}{x-1} \leq \frac{x-3}{x+5} \rightarrow \frac{x+3}{x-1} - \frac{x-3}{x+5} \leq 0$$

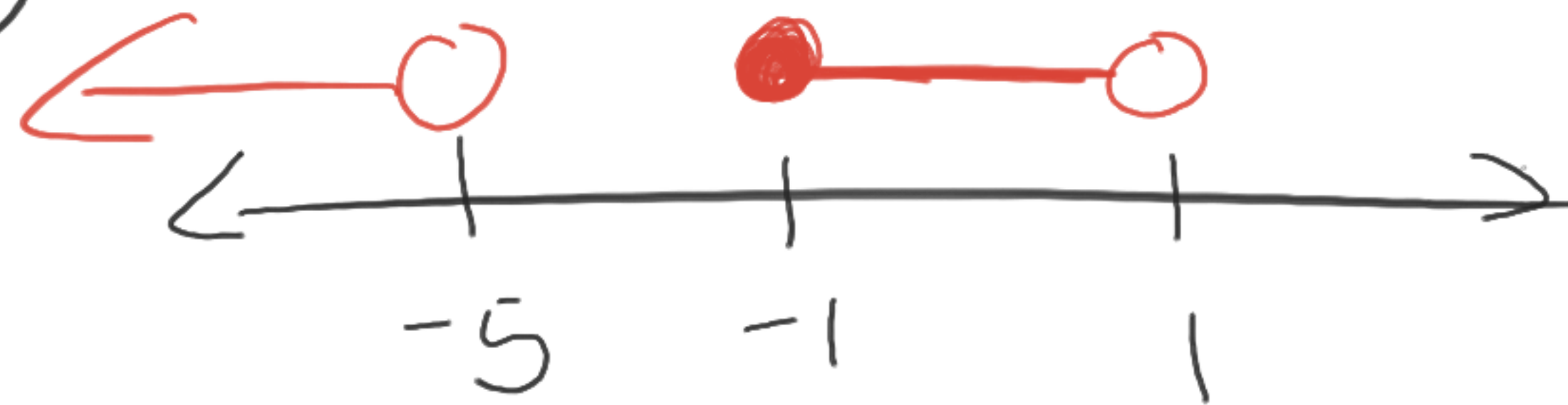
$$\frac{(x+3)(x+5) - (x-3)(x-1)}{(x-1)(x+5)} = \frac{12x+12}{(x-1)(x+5)}$$

$$x^2 + 5x + 3x + 15 + (-x^2 + 1x + 3x - 3)$$

$$12x + 12$$

$$\frac{12x + 12}{(x-1)(x+5)} \leq 0$$

$X = -1$ $X \neq 1$ $X \neq -5$



$$(-\infty, -5) \cup [-1, 1)$$

-6	-2	0	2
$\frac{-}{-}$	$\frac{-}{+}$	$\frac{+}{-}$	$\frac{+}{+}$
\ominus	\oplus	\ominus	\oplus