$$\left|\frac{x+2}{2-x}\right| < 5$$

Fall 1:

$x+2 \overset{!}{<} 0 \wedge 2-x \overset{!}{<} 0 \Rightarrow x<-2 \wedge x>2$ ↯

Fall 2:

$x+2 \overset{!}{\geq} 0 \wedge 2-x \overset{!}{\geq} 0 \Rightarrow x \geq -2 \wedge x \leq 2 \Rightarrow x \in [-2,2] =: A$

Fall 3:

$x+2 \overset{!}{\geq} 0 \wedge 2-x \overset{!}{<} 0 \Rightarrow x \geq -2 \wedge x > 2 \Rightarrow x \in]2,\infty[\; =: B$

Fall 4:

$x+2 \overset{!}{<} 0 \wedge 2-x \overset{!}{\geq} 0 \Rightarrow x<-2 \wedge x \leq 2 \Rightarrow x \in]-\infty,-2[\; =: C$

Zu Fall 2:

$\left|\frac{x+2}{2-x}\right| < 5 \Leftrightarrow \frac{x+2}{2-x} < 5 \Leftrightarrow x+2 < 10-5x \Leftrightarrow 6x < 8 \Leftrightarrow x < \frac{4}{3}$

Zu Fall 3:

$\left|\frac{x+2}{2-x}\right| < 5 \Leftrightarrow -\frac{(x+2)}{(2-x)} < 5 \Leftrightarrow -x-2 > 10-5x \Leftrightarrow 4x > 12 \Leftrightarrow x > 3$

Zu Fall 4:

$\left|\frac{x+2}{2-x}\right| < 5 \Leftrightarrow -\frac{(x+2)}{2-x} < 5 \Leftrightarrow -x-2 < 10-5x \Leftrightarrow 4x < 12 \Leftrightarrow x < 3$

Also:

i)

$[-2,2] \cap]-\infty,\frac{4}{3}[\; = [-2,\frac{4}{3}[\; =: L_1$

ii)

$]2,\infty[\cap]3,\infty[\; = \;]3,\infty[\; =: L_2$

iii)

$]-\infty,-2[\cap]-\infty,3[\; = \;]-\infty,-2[\; =: L_2$

$\Rightarrow L = L_1 \cup L_2 \cup L_3 = \;]-\infty,\frac{4}{3}[\cup]3,\infty[$