$$\left|\frac{5x-3}{x+2}\right| < 1$$

$$\frac{|5x-3|}{|x+2|} < 1$$

$|5x-3| < |x+2|$ — see picture

Expanding Abs Value

$5x-3 \le 0$ or $5x-3 \ge 0$

$-(5x-3) < |x+2|$ | $(5x-3) < |x+2|$

$x+2 \le 0$ | $x+2 \ge 0$ | $x+2 \le 0$ | $x+2 \ge 0$

again! again!

① $-(5x-3) < -(x+2)$
$5x-3 > x+2$
$4x > 5$
$x > 5/4$

② $-(5x-3) < x+2$
$-5x+3 < x+2$
$1 < 6x$
$\frac{1}{6} < x$

③ $(5x-3) < -(x+2)$
$5x-3 < -x-2$
$6x < 1$
$x < \frac{1}{6}$

④ $5x-3 < x+2$
$4x < 5$
$x < 5/4$

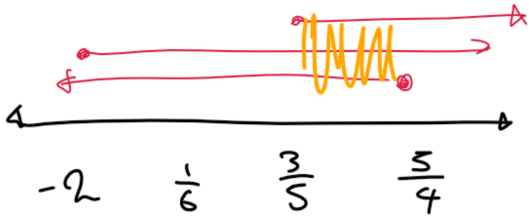
Breaking into Cases

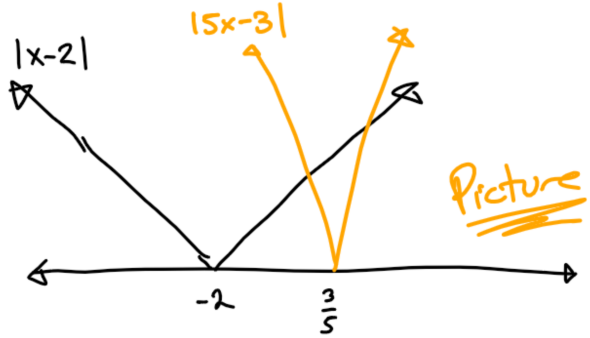
	$x \le -2$	$-2 \le x$
$x \le 3/5$	① ✗ Cannot occur $\frac{5}{4} < x$	② ok! $\frac{1}{6} < x$
$3/5 \le x$	③ ✗ Cannot occur $x < \frac{1}{6}$	④ $x < 5/4$ ok!

Good thing to check: why doesn't this case ($x \le -2, 3/5 \le x$) occur?

Case 4

$x \in [3/5, 5/4)$





From case ③ $x \in (\frac{1}{6}, \frac{3}{5}]$

From case ④ $x \in [3/5, 5/4)$

$(\frac{1}{6}, \frac{3}{5}] \cup [\frac{3}{5}, \frac{5}{4})$

$x \in (\frac{1}{6}, \frac{5}{4})$