

Solving a Rational Inequality

Solve: $\frac{6}{4-x} \leq 5$ change to an =

$$\frac{6}{4-x} = 5$$

solve taking restriction into account

$$6 = 5(4-x)$$

$$6 = 20 - 5x$$

$$\frac{-14}{-5} = \frac{-5x}{-5}$$

$$CP \rightarrow x = 2.8$$

put critical points on number line

Asymptote:

$$\frac{6}{4-x} \Rightarrow \frac{6}{-(x-4)}$$

$$\therefore x \neq 4 \leftarrow CP!$$



test values to figure out solution set

$$\text{test: } x = 3$$

$$\frac{6}{4-3} \leq 5$$

$$6 \leq 5 \quad \underline{\text{NO}} \quad \therefore 3 \text{ is not a sol.}$$

$$\underline{\text{test:}} \quad x = 0$$

$$\frac{6}{4-0} \leq 5$$

$$\frac{6}{4} \leq 5 \quad \checkmark$$

$$\therefore \text{Sol: } x \in]-\infty, 2.8] \cup]4, \infty[$$

$$\frac{4x-3}{2x+5} \leq 1$$

V.
Asymptote $x = -\frac{d}{c}$
 $x \neq -\frac{5}{2}$

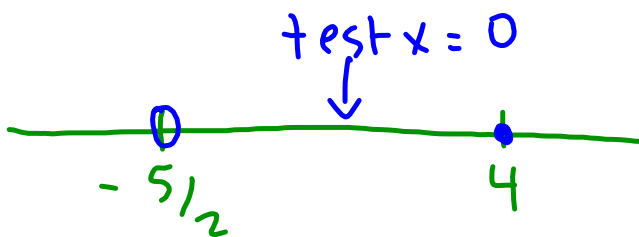
now solve:

$$\frac{4x-3}{2x+5} = 1$$

$$4x-3 = 2x+5$$

$$2x = 8$$

$$x = 4$$



$$\frac{4(0)-3}{2(0)+5} \stackrel{?}{\leq} 1$$

$$-\frac{3}{5} \leq 1 \quad \checkmark$$

$$\therefore x \in \left] -\frac{5}{2}, 4 \right]$$

OR

$$-\frac{5}{2} < x \leq 4$$