IB Math 1 2F Sign Diagrams and 2G Solving Inequalities

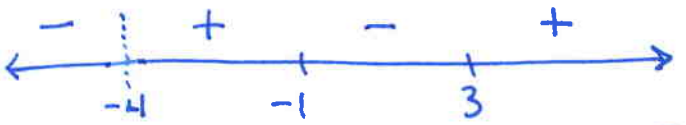
1. $\dfrac{x^2-2x-3}{x+4}$

a. What value must be excluded from the domain?

$x \neq -4$

b. Draw a sign diagram with a dotted line at the excluded value.

$\dfrac{(x-3)(x+1)}{x+4}$



* Roots get a solid line

* Excluded values get a dotted line

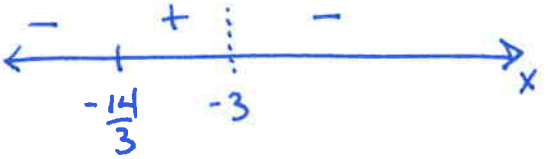
plug in $-5 \rightarrow \dfrac{(-5-3)(-5+1)}{-5+4} \rightarrow -$

2. Draw a sign diagram for $\dfrac{x-2}{x+3}-4$. (Hint: First write as a single fraction.)

$\dfrac{x-2}{x+3} - \dfrac{4(x+3)}{x+3}$

$\dfrac{x-2-4x-12}{x+3}$

$\dfrac{-3x-14}{x+3}$



$-3x-14=0$

$-3x=14$

$x=-\frac{14}{3}$

↖ on the quiz

Not on the quiz

3. Solve for x: $\frac{4}{x} \geq x+3$. (Hint: Get 0 on one side then rearrange to make a sign diagram.)

$$\frac{4}{x} - x - 3 \geq 0$$

$$\frac{4}{x} - \frac{x \cdot x}{x} - \frac{3 \cdot x}{x} \geq 0$$

$$\frac{4 - x^2 - 3x}{x} \geq 0$$

$$\frac{-x^2 - 3x + 4}{x} \geq 0$$

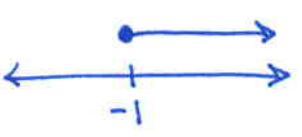
$$\frac{-(x^2 + 3x - 4)}{x} \geq 0$$

$$\frac{-(x+4)(x-1)}{x} \geq 0$$

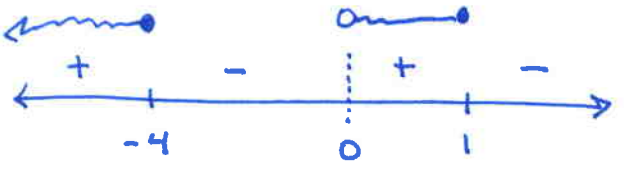
$2x + 7 \geq 5$

$2x \geq -2$

$x \geq -1$



$[-1, \infty)$



$(-\infty, -4] \cup (0, 1]$

2F (lg-1, 4 1st column)