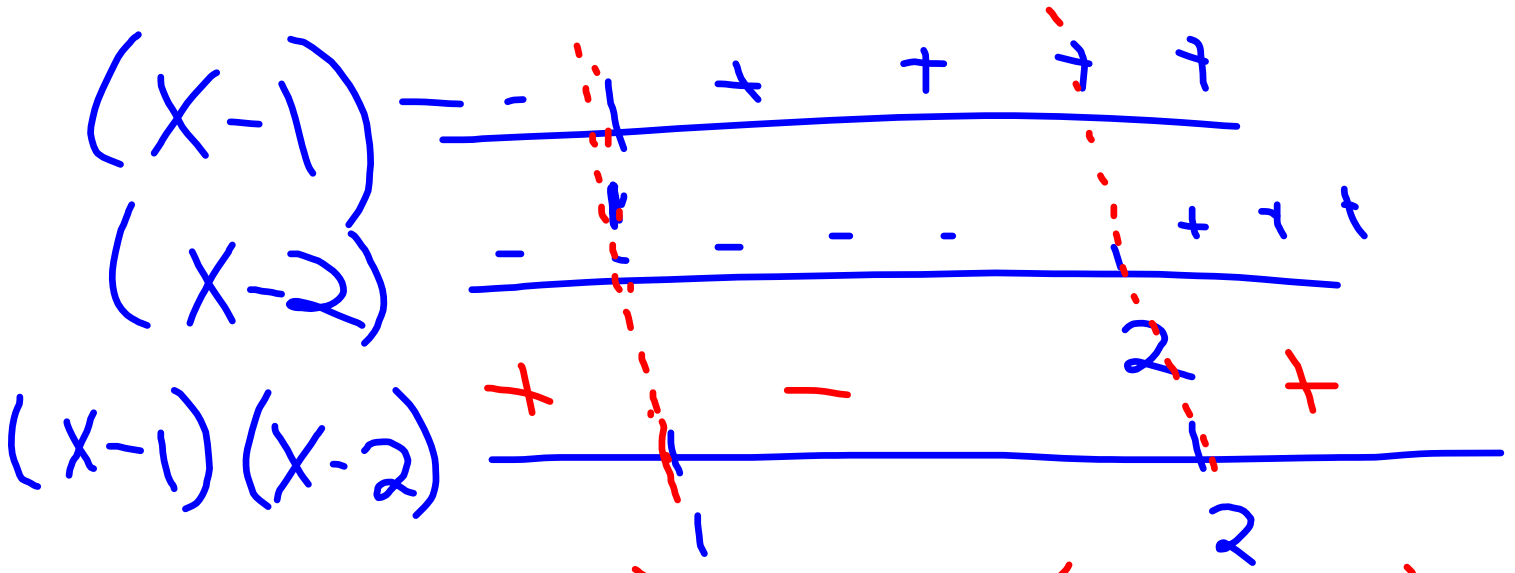
Append A

#25

$(x-1)(x-2) > 0$

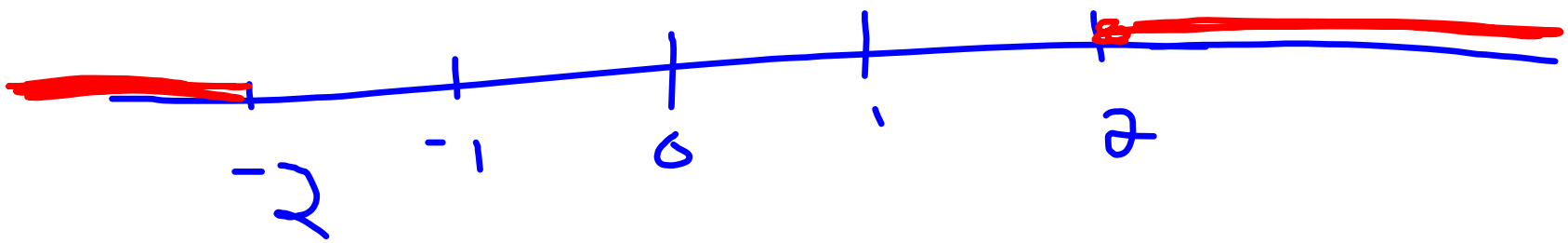



Ans: $(-\infty, 1) \cup (2, \infty)$

$|x+5| \geq 2$

Side thought

$|x| \geq 2$



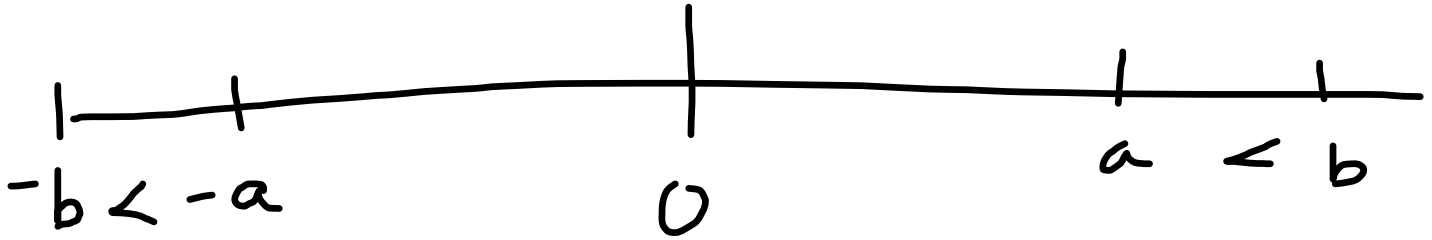

$x \leq -2$ or $x \geq 2$

So $|x+5| \geq 2$ means

$x+5 \leq -2$ or $x+5 \geq 2$

$x \leq -7$ or $x \geq -3$

ans: $(-\infty, -7]$ or $[-3, \infty)$


-b < -a
0
a < b

1.1

#22.

$$f(x) = \frac{x}{x+1}$$

$$f(2+h) = \frac{2+h}{2+h+1} = \frac{2+h}{3+h}$$

$$f(x+h) = \frac{x+h}{x+h+1}$$

$$\frac{\frac{f(x+h)-f(x)}{h}}{h} = \frac{\frac{x+h}{x+h+1} - \frac{x}{x+1}}{h}$$

Now simplify . . .

$$\frac{\frac{x+h}{x+h+1} - \frac{x}{x+1}}{h} = \frac{\frac{(x+h)(x+1)}{(x+h+1)(x+1)} - \frac{x}{x+1}\frac{(x+h+1)}{(x+h+1)}}{h}$$

$$\frac{(x+h)(x+1) - x(x+h+1)}{(x+h+1)(x+1)} \cdot \frac{1}{h}$$

$$\frac{x^2+hx+h+x - [x^2+xh+x]}{(x+h+1)(x+1)\cdot h}$$

$$= \frac{\cancel{h}}{(x+h+1)(x+1)\cdot\cancel{h}} = \frac{1}{(x+h+1)(x+1)}$$

eg # 24

$$f(x) = \frac{5x+4}{x^2+3x+2}.$$

Domain is either given explicitly, ie "for $x \geq 5$" or implicitly, mean it is everything that is 'legal' to plug into the function

ie no 0 in denom

no $\sqrt[\text{even}]{\text{neg}}$, no undef trig fncts

etc.

Here, can't have

$$x^2+3x+2=0$$

so $(x+2)(x+1)=0$

so can't have $x=-2$ or $x=-1$

Domain is $x \neq -1, -2$

or $(-\infty,-1) \cup (-1,-2) \cup (-2,\infty)$

$x \in \mathbb{R} - \{-1,-2\}$

eg #26

$$f(u) = \sqrt{u} - \sqrt{4-u}$$

cant have $u < 0$

cant have $u > 4$


Domain $[0, 4]$

# #32

$$H(t) = \frac{4 - t^2}{2 - t}$$

Domain (implicit in way function is writen)

is $t \neq 2$

Note $\frac{4 - t^2}{2 - t} = \frac{(2+t)(2-t)}{2-t} = 2 + t$

We could write

$H(t) = 2+t$, with $t \neq 2$