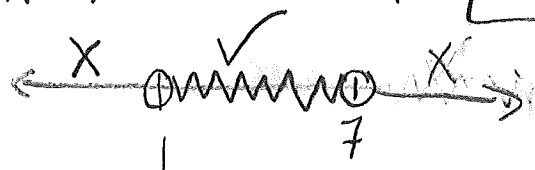


Lesson 7.8 Optional HW

Solve the rational inequalities. State your answer in interval notation.

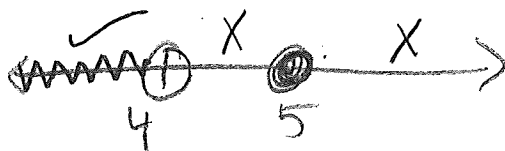
1)  $\frac{x-7}{x-1} \leq 0$  *open circle*

$x-7=0 \Rightarrow x=7$   
 $x-1 \neq 0 \Rightarrow x \neq 1$



**Final answer**  
 $(-\infty, 4) \cup [5, \infty)$

2)  $\frac{x+5}{x-4} \leq 0$



$x=0 \Rightarrow \frac{0-7}{0-1} = 7$   
 $x=2 \Rightarrow \frac{2-7}{2-1} = -5$   
 $x=8 \Rightarrow \frac{8-7}{8-1} = \frac{1}{7}$

3)  $\frac{x+32}{x+6} \leq 3$

$\frac{x+32}{x+6} - 3 \leq 0$

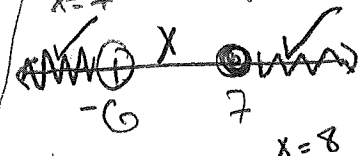
$\frac{x+32 - 3(x+6)}{x+6} \leq 0$

$\frac{x+32 - 3x - 18}{x+6} \leq 0$

$\frac{-2x+14}{x+6} \leq 0$

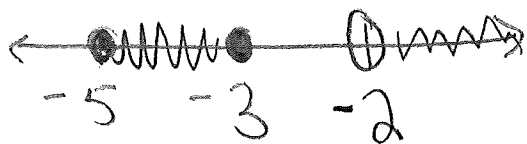
$\frac{-2(x-7)}{x+6} \leq 0$

$x-7=0 \Rightarrow x=7$   
 $x+6 \neq 0 \Rightarrow x \neq -6$



$x=-7$   
 $x=0$   
 $x=8$   
 **$(-\infty, -6) \cup [7, +\infty)$**

5)  $\frac{(x+3)(x+5)}{x+2} \geq 0$



$x=-6$  X  
 $x=-4$  ✓  
 $x=-2.5$  X  
 $x=0$  ✓  
 **$[-5, -3] \cup [-2, +\infty)$**

$x=3 \Rightarrow \frac{3+5}{3-4} = -8$   
 $x=4.5$   
 $x=6$

4)  $\frac{x+68}{x+8} \geq 5$

$\frac{x+68}{x+8} - 5 \geq 0$

$\frac{x+68 - 5(x+8)}{x+8} \geq 0$

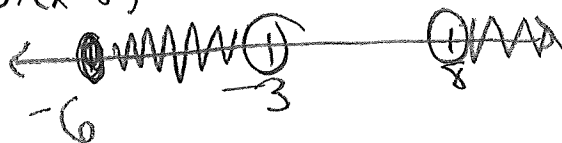
$\frac{x+68 - 5x - 40}{x+8} \geq 0$

$\frac{-4x+28}{x+8} \geq 0$

$\frac{-4(x-7)}{x+8} \geq 0$

6)  $\frac{x+6}{x^2-5x-24} \geq 0$

$\frac{x+6}{(x+3)(x-8)} \geq 0$



$x=-7$  X  
 $x=-4$  ✓  
 $x=0$  X

$x=9$  ✓  
 **$[-6, -3] \cup [8, +\infty)$**