

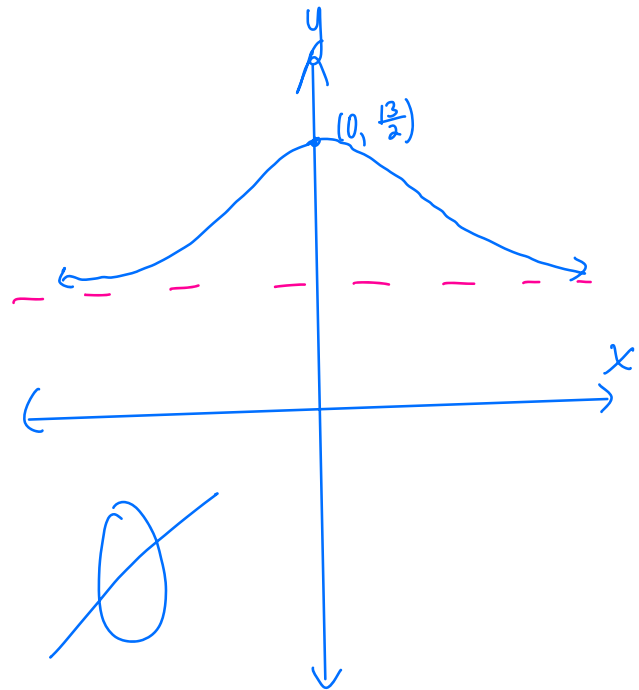
① Solve using your calculator:

$$4 < \frac{-5}{x^2+2}$$

$$4 + \frac{5}{x^2+2} < 0$$

PVA: none

$$EB: y = 4 - 0 = 4$$



② Solve using your calculator:

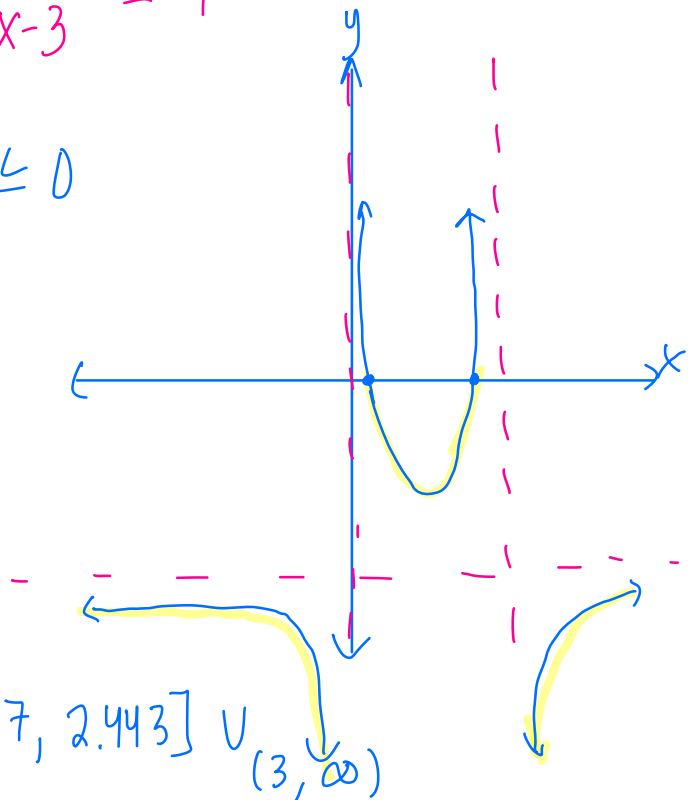
$$\frac{1}{x} - \frac{2}{x-3} \leq 4$$

$$\frac{1}{x} - \frac{2}{x-3} - 4 \leq 0$$

$$y \leq 0$$

PVA:  $x=0, 3$

$$EB: y = -4$$



$$(-\infty, 0) \cup [.307, 2.443] \cup (3, \infty)$$

③ Sketch without using your calculator: *does it miss OA?*  $\frac{x^2+4x}{5x-15} = \frac{x+7}{5}$

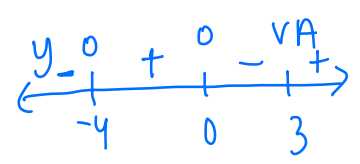
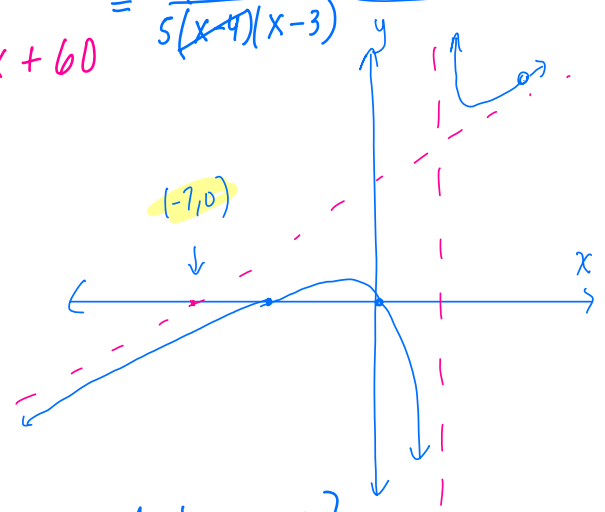
OA:  $y = \frac{x+7}{5}$  or  $\frac{1}{5}x + \frac{7}{5}$   
 $m = \frac{1}{5}$   $b = \frac{7}{5}$   
 $x\text{-int} = (-7, 0)$

$$y = \frac{x(x+4)}{5(x-3)} = \frac{x^2+4x}{5(x-3)}$$

$$\begin{array}{r|rrrr} 3 & 1 & 4 & 0 & \\ & & 3 & 21 & \\ \hline & 1 & 7 & 21 & \end{array}$$

$5x^2+21x = 5x^2+20x-105$   
 $0 \neq -105$

$$= \frac{x(x+4)(x-4)}{5(x-4)(x-3)}$$



hole:  $(4, \frac{32}{5})$   
 VA:  $x=3$   
 HA: none  
 OA:  $y = \frac{1}{5}x + \frac{7}{5}$   
 $x\text{-int}: (0,0), (-4,0)$   
 $y\text{-int}: (0,0)$

$D: \{x | x \neq 3, 4\}$

Write an equation for a rational function with the following characteristics

④ HA:  $y=0$   
 VA:  $x=1$   
 hole:  $(-2, 4)$

$$y = \frac{-12(x+2)}{(x-1)(x+2)}$$

⑤ HA: none  
 VA:  $x=0, -1$

$$y = \frac{x^3+2}{x(x+1)}$$

← can't use  $x^3+1$  b/c that would factor to  $(x+1)(x^2-x+1)$  creating a hole at  $x=-1$  instead of a VA

$$y = \frac{a}{x-1}$$

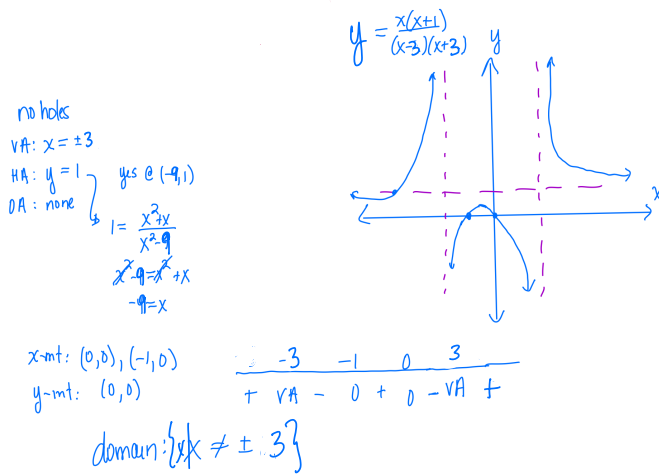
$$4 = \frac{a}{-2-1}$$

$$a = -12$$

$$y = \frac{-12x-24}{x^2+x-2}$$

⑥ Sketch without your calculator

$$y = \frac{x^2 + x}{x^2 - 9}$$



⑦ Solve using your calculator:

$$\frac{2}{x-1} + x > 5$$

$$\frac{2}{x-1} + x - 5 > 0$$

$$y > 0$$

$$\text{PVA: } x = 1$$

$$\text{EB: } y = 0 + x - 5 = x - 5$$

$$\text{SB: } \{x \mid 1 < x < 1.586 \vee 4.414 < x\}$$

