

Name: \_\_\_\_\_  
PC: \_\_\_\_\_

Date: \_\_\_\_\_

Do Now:

Solve each graphically:

- Sketch a complete graph of the function showing all intercepts and asymptotes
- Write the window settings you use on the calculator
- Find the solution set of the given equation (Round answers to 3 decimal places)

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

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

$y \leq 0$

PVA:  $x = 0, 3$

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

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

SB:  $\{x \mid x < 0 \vee .307 \leq x \leq 2.443 \vee x > 3\}$

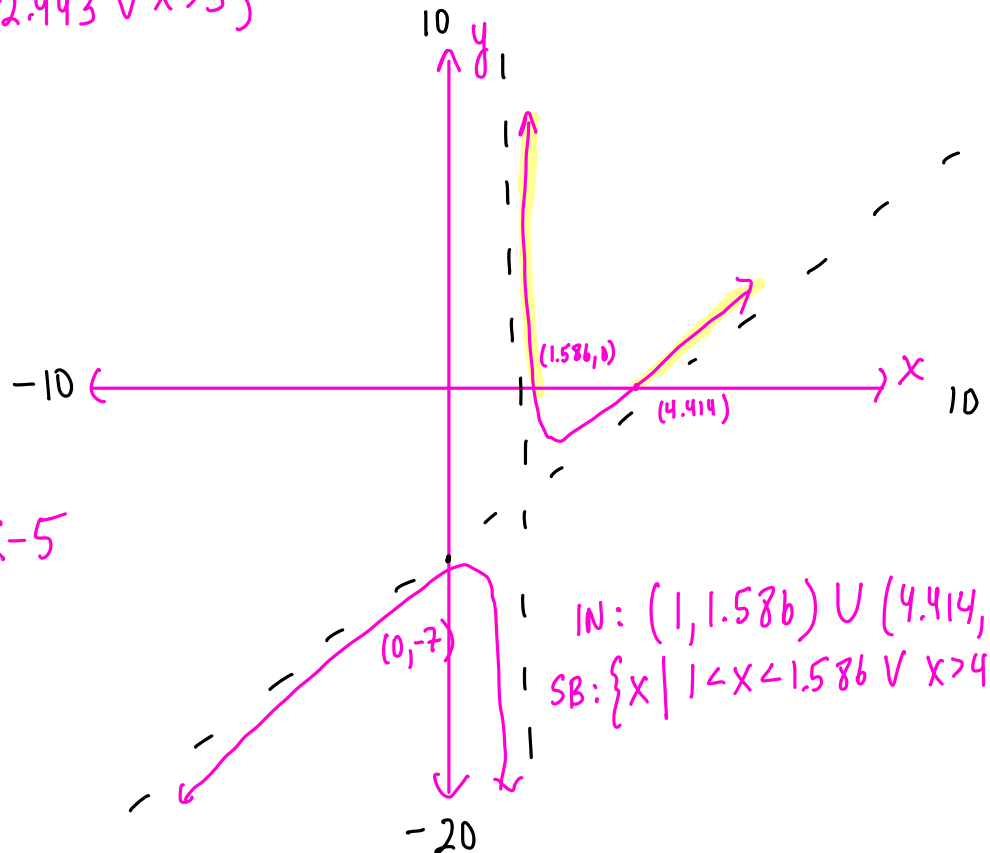
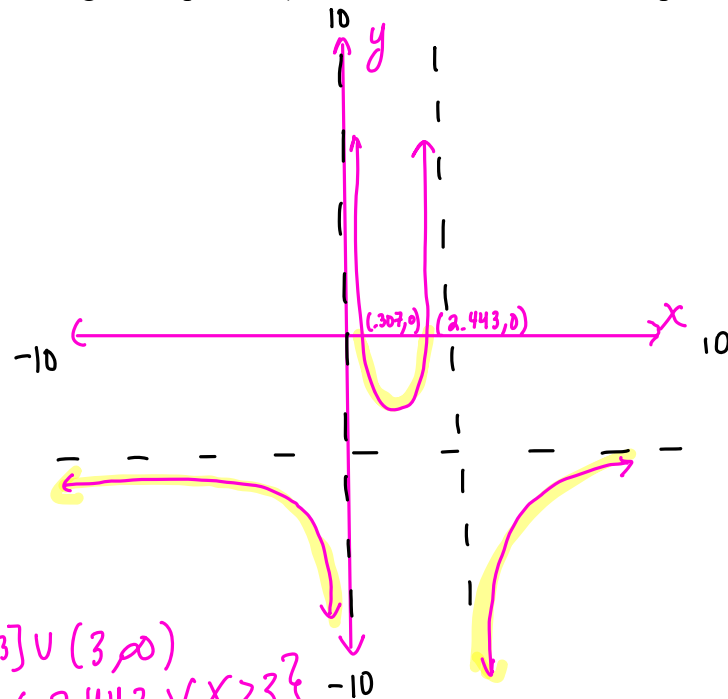
2)  $\frac{2}{x-1} + x > 5$

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

$y > 0$

PVA:  $x = 1$

EB:  $y = 0 + x - 5 = x - 5$



IN:  $(1, 1.586) \cup (4.414, \infty)$

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

Name: \_\_\_\_\_

Date: \_\_\_\_\_

PC: Solving Rational Equations and Inequalities Graphically Review

1. Solve the following equation graphically by doing each of the following:
  - (a) Draw a complete graph of the function showing all intercepts and asymptotes.
  - (b) Write the window settings you use on your graph.
  - (c) Find the solution set

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

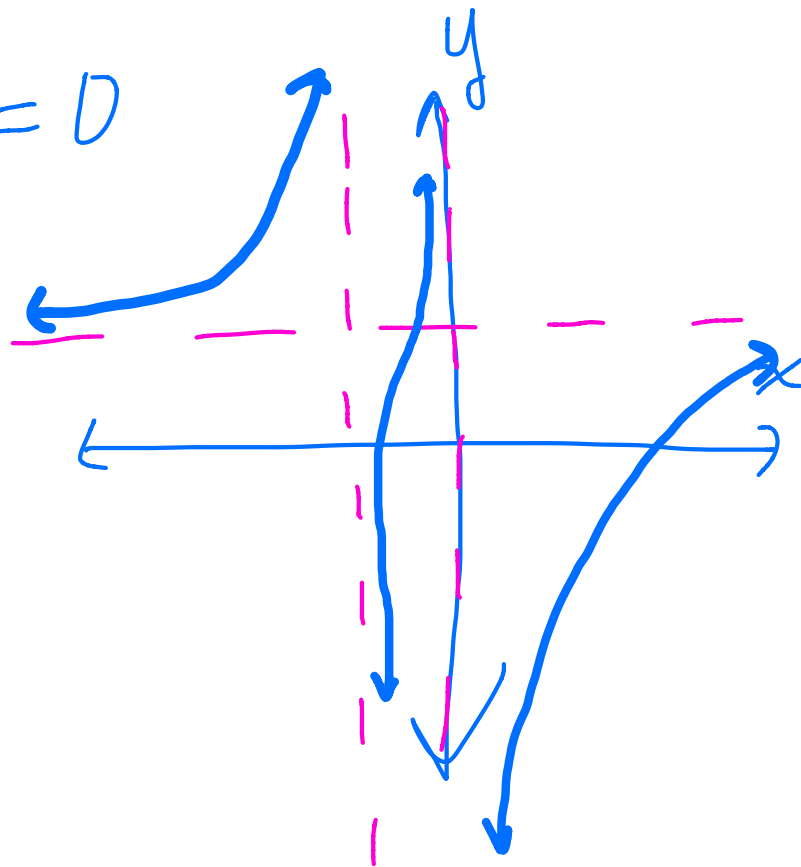
$$\frac{2x-5}{x+1} - \frac{3}{x^2+x} = 0$$

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

PVA:  $x = 0, -1$

EB:  $y = 2 - 0 = 2$

$$\left\{-\frac{1}{2}, 3\right\}$$



TURN OVER

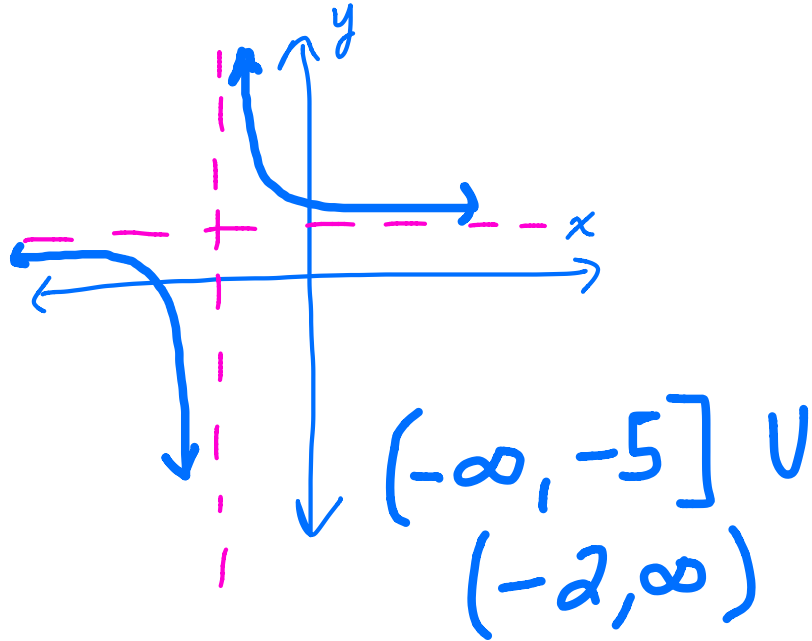
Solve the following rational inequalities graphically by doing the following:

- Draw a complete graph of the function showing all intercepts and asymptotes.
- Write the window settings you use on your graph.
- (Optional)** Using your graph, draw a number line with critical points that shows the values of  $x$  that satisfy the inequality.
- State the solution set using both set builder notation and interval notation.

2.  $\frac{x+4}{x+2} \geq \frac{1}{3}$

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

PVA:  $x = -2$   
 EB:  $y = 1 - \frac{1}{3} = \frac{2}{3}$

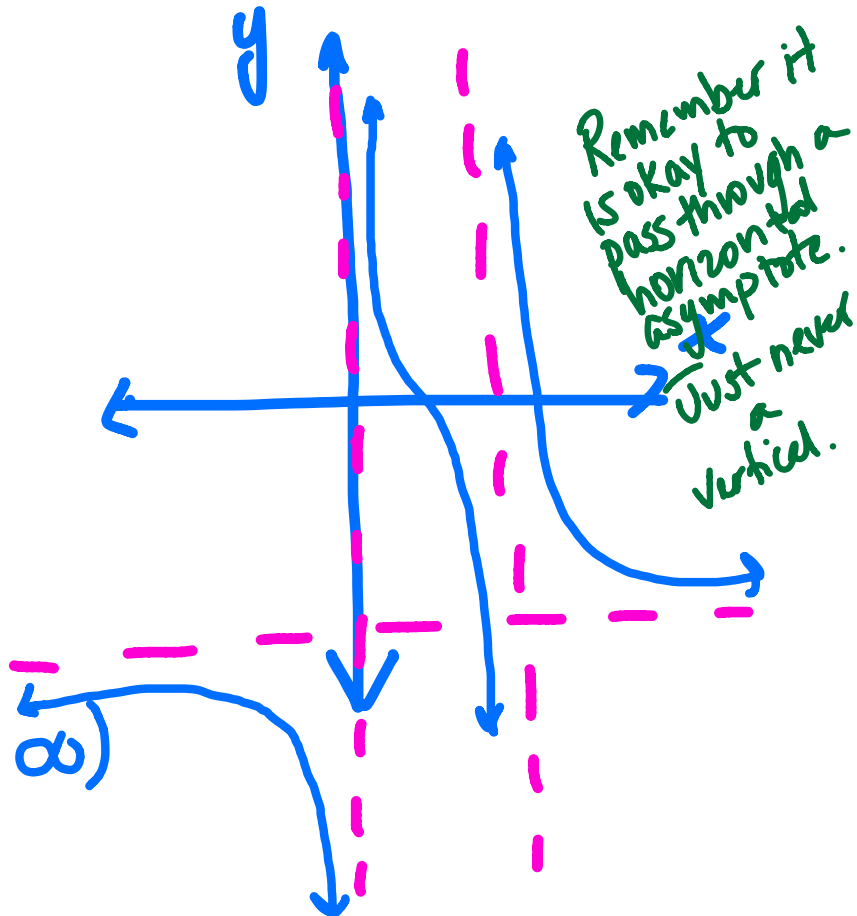


3.  $\frac{2}{x-2} + \frac{5}{x} \leq 7$

$$\frac{2}{x-2} + \frac{5}{x} - 7 \leq 0$$

PVA:  $x = 2, 0$   
 EB:  $y = 0 + 0 - 7 = -7$

$(-\infty, 0) \cup$   
 $[.594, 2) \cup [2.406, \infty)$



## Practice

Solve each rational inequality below graphically by doing the following:

- Draw a complete graph of the function showing all intercepts and asymptotes.
- Write the window settings you use on your graph.
- Using your graph, draw a number line with critical points that shows the values of  $x$  that satisfy the inequality.
- State the solution set using both set builder notation and interval notation.

$$1. \frac{x-1}{x+4} > 3$$

$$(-6.5, -4)$$

$$4. \frac{2}{x-2} + \frac{5}{x} \leq 7$$

$$(-\infty, 0) \cup [0.594, 2) \cup [2.406, \infty)$$

$$2. \frac{x^2-x+1}{x+2} < 3$$

$$(-\infty, -2) \cup (-1, 5)$$

$$5. \frac{3}{x-1} + \frac{2}{x} \geq 8$$

$$(0, .172] \cup (1, 1.453]$$

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

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

$$6. \frac{x-1}{x+4} + \frac{2}{x-8} \geq 10$$

$$[-4.546, -4) \cup$$

$$[7, 8.213]$$