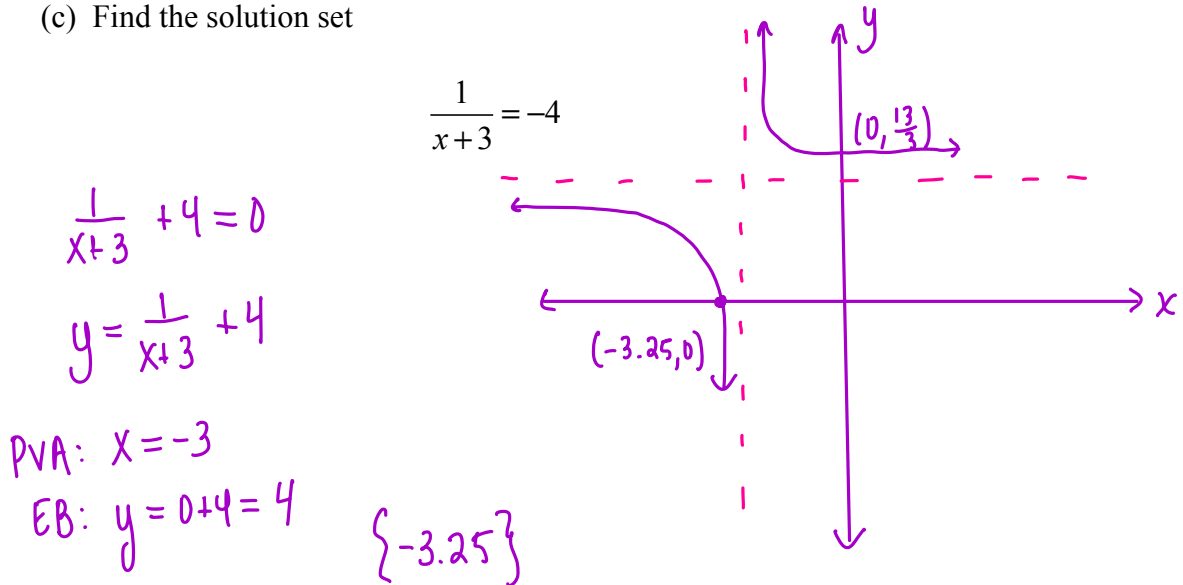


Do Now:

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



Solve each rational inequality below graphically by doing 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) State the solution set using both set builder notation and interval notation.

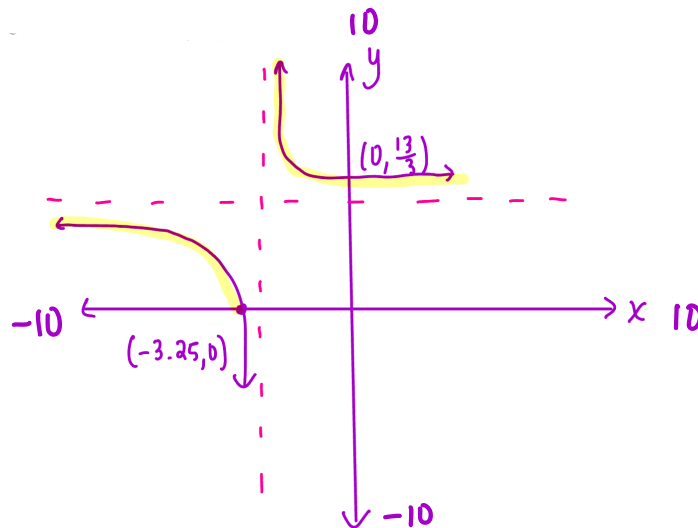
1. $\frac{1}{x+3} \geq -4$

$y = \frac{1}{x+3} + 4$

we want $y \geq 0$

PVA: $x = -3$

EB: $y = 4$



IN: $(-\infty, -3.25] \cup (-3, \infty)$

SB: $\{x \mid x \leq -3.25 \vee x > -3\}$

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

we want $y > 0$
 only difference b/w #1 and
 #2, no =

the graphs the same but the solution set changes slightly

$$IN: (-\infty, -3.25) \cup (-3, \infty)$$

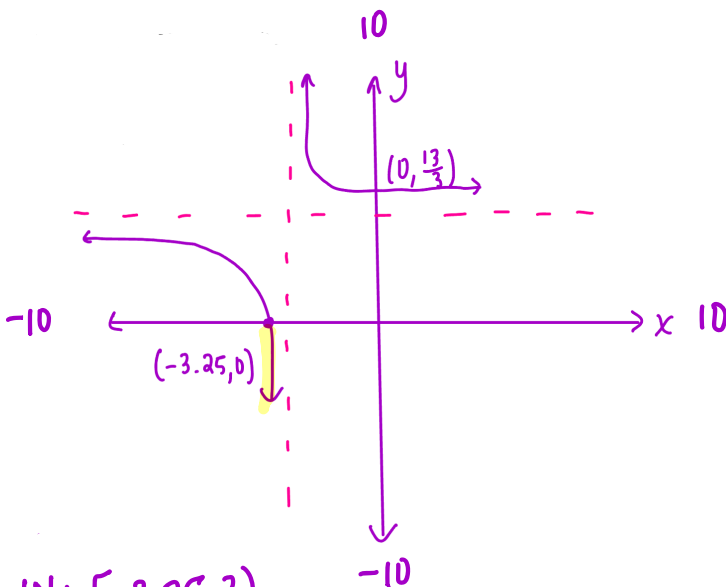
$$SB: \{x \mid x < -3.25 \vee x > -3\}$$

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

$\frac{1}{x+3} + 4 \leq 0$
 we want $y \leq 0$

$$PVA: x = -3$$

$$EB: y = 4$$



$$IN: [-3.25, -3)$$

$$SB: \{x \mid -3.25 \leq x < -3\}$$

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

only difference b/w #3 and 4
 is we take away the =

we want $y < 0$

$$IN: (-3.25, -3)$$

$$SB: \{x \mid -3.25 < x < -3\}$$

$$5. \frac{x-3}{x+5} \leq 9$$

$$\frac{x-3}{x+5} - 9 \leq 0$$

we want

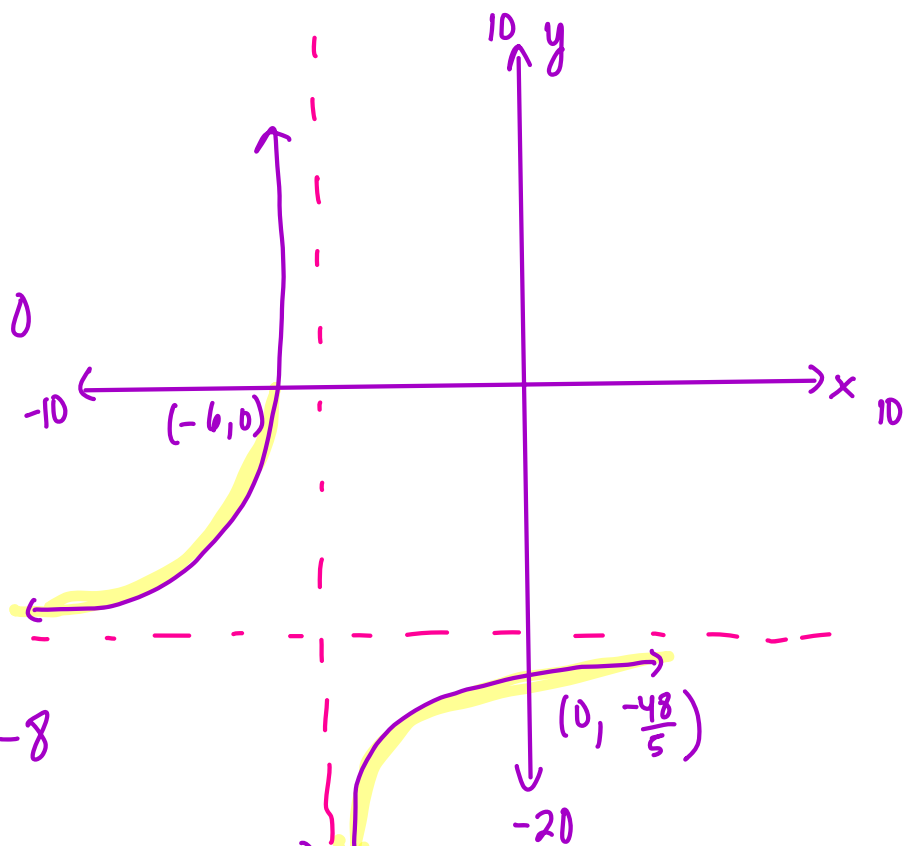
$$y \leq 0$$

$$\text{PVA: } x = -5$$

$$\text{EB: } y = 1 - 9 = -8$$

$$\text{IN: } (-\infty, -6] \cup (-5, \infty)$$

$$\text{SB: } \{x \mid x \leq -6 \vee x > -5\}$$



$$6. \frac{x+3}{2x-7} < 5$$

$$\frac{x+3}{2x-7} - 5 < 0$$

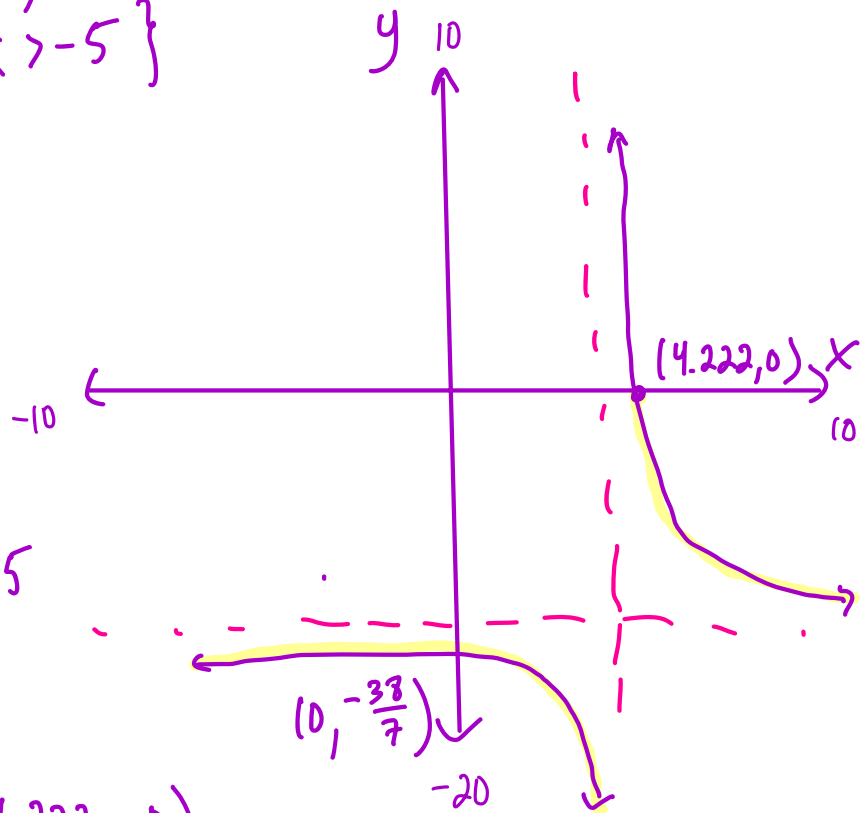
we want $y < 0$

$$\text{PVA: } x = \frac{7}{2} \text{ or } 3.5$$

$$\text{EB: } y = \frac{1}{2} - 5 = -4.5$$

$$\text{IN: } (-\infty, 3.5) \cup (4.222, \infty)$$

$$\text{SB: } \{x \mid x < 3.5 \vee x > 4.222\}$$

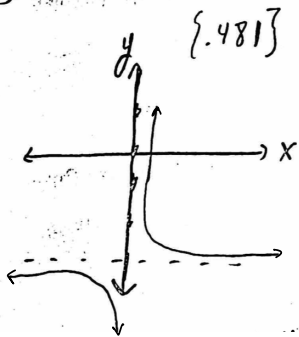


Homework 01-03

① $\frac{4}{x} + \frac{1}{3x} - 9 = 0$

PVA: $x=0$

EB $y = -9$

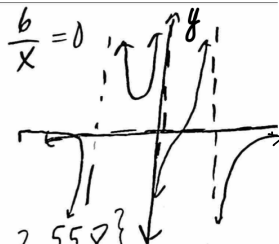


③ $\frac{2}{x+5} - \frac{3}{x-4} - \frac{6}{x} = 0$

PVA $x = -5, 4, 0$

EB $y = 0$

$\{-6.701, 2.558\}$



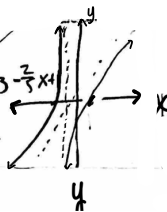
⑤ $\frac{6x^2 + 5x - 11}{3x + 2} = \frac{2x - 5}{5}$

$\{-2.311, .811\}$

PVA: $x = -2/3$

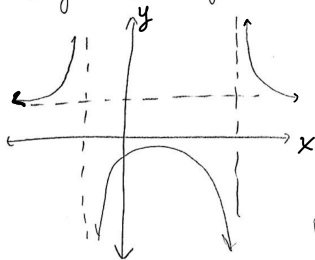
EB $y = 2x + 1/3 - 2/3x + 1$

$y = 5/3x + 4/3$



⑦ $\frac{x}{x^2 - 4x + 12} - \frac{x+1}{6x} + \frac{x-3}{2x} = 0$

PVA $x = 6, -2$
EB: $y = 0 - (-1) + 1 \Rightarrow y = 2$



$$\begin{array}{r} 2x + \frac{1}{3} \\ 3x+2 \overline{) 6x^2 + 5x - 11} \\ \underline{6x^2 + 4x} \\ x - 11 \\ \underline{x + \frac{1}{3}} \\ -\frac{35}{3} \end{array}$$

⑨ $\frac{x^2 - 2x - 3}{x^2 - x - 6} - \frac{x}{x+2} - \frac{5-x}{x-3} = 0$

PVA $x = 3, -2$

EB $y = 1 - 1 - (-1) = 1$

$\{-2.742, 4.742\}$

