

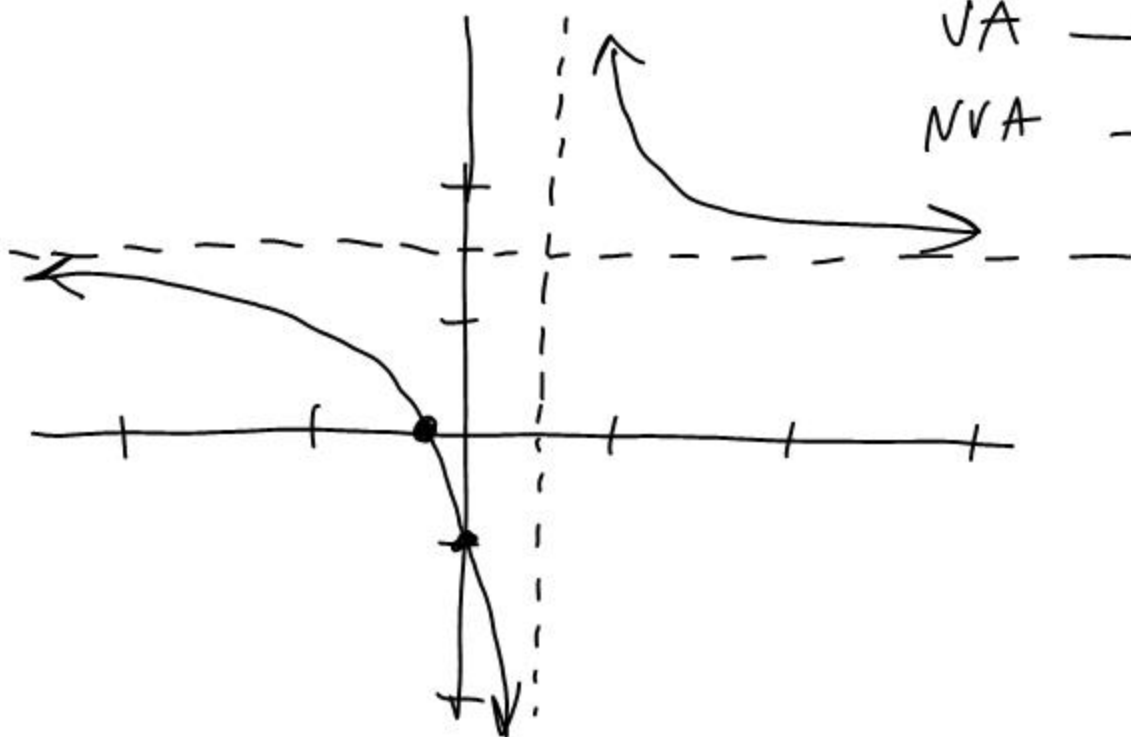
$$(1) y = \frac{3x + 1}{2x - 1}$$

$$x\text{-int } \frac{-1/3}{-}$$

$$y\text{-int } \frac{-1}{-}$$

$$VA \quad \frac{x = 1/2}{-}$$

$$NVA \quad \frac{y = 3/2}{-}$$



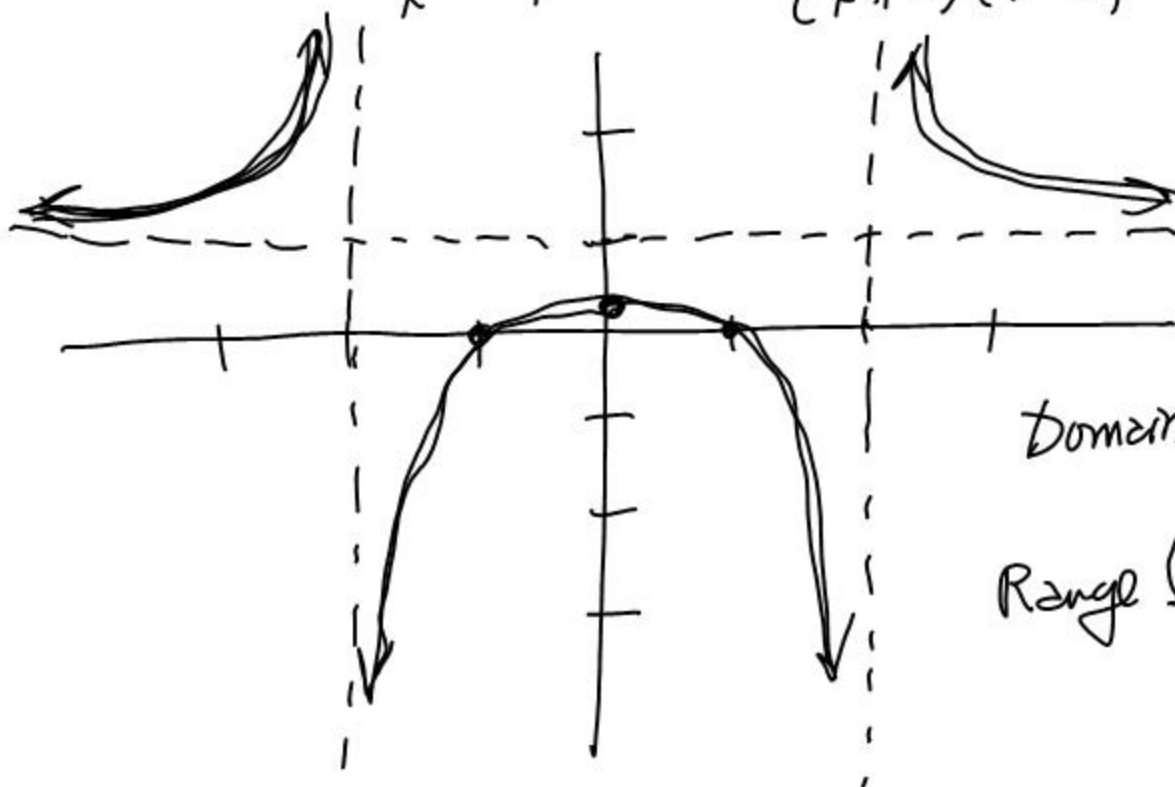
$$(2) y = \frac{x^2 - 1}{x^2 - 4} = \frac{(x+1)(x-1)}{(x+2)(x-2)}$$

$$x\text{-int } \frac{\pm 1}{-}$$

$$y\text{-int } \frac{1/4}{-}$$

$$VA \quad \frac{x = \pm 2}{-}$$

$$NVA \quad \frac{y = 1}{-}$$



$$\text{Domain } \frac{\mathbb{R} - \{\pm 2\}}{-}$$

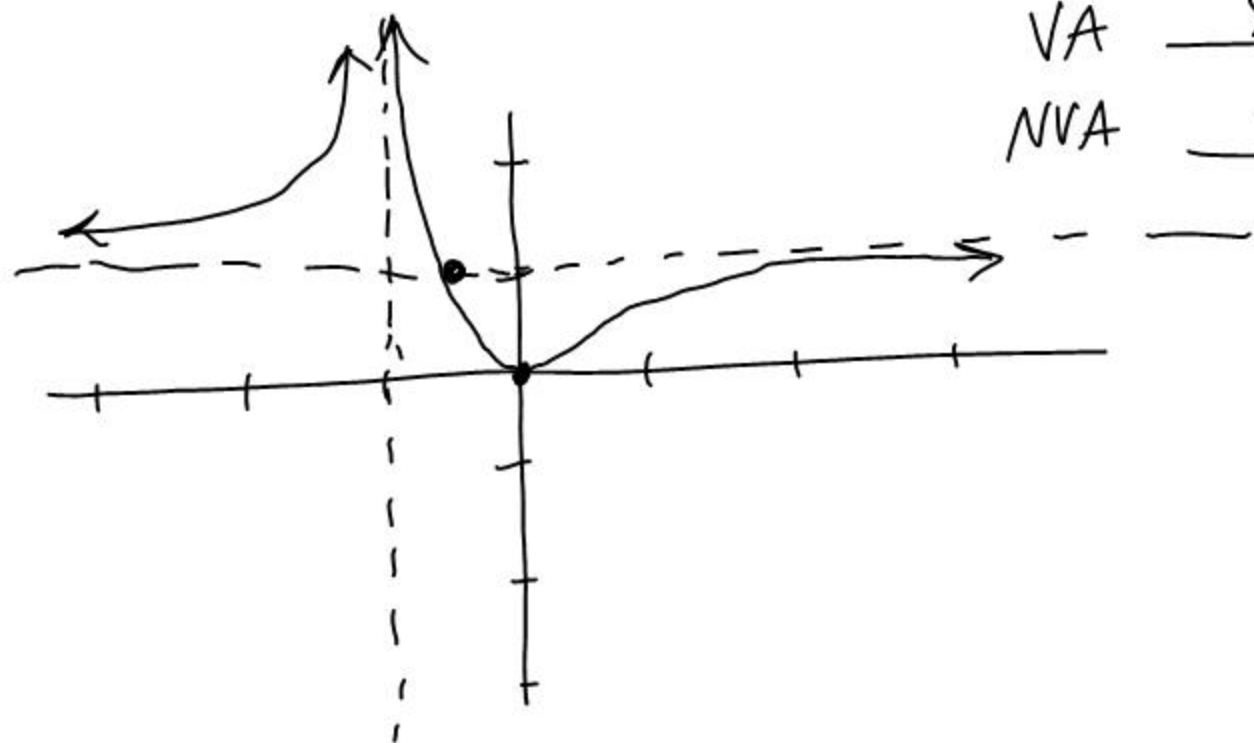
$$\text{Range } \frac{(-\infty, \frac{1}{4}] \cup (1, \infty)}{-}$$

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

$x$ -int  $\frac{0}{0}$   
 $y$ -int  $\frac{0}{0}$

VA  $\frac{x = -1}{}$

NVA  $\frac{y = 1}{}$



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

$$x^2 = (x+1)^2$$

$$0 x^2 = x^2 + 2x + 1$$

$$-1 = 2x$$

$$\boxed{-\frac{1}{2} = x}$$

$$y = \frac{x^2 - 9}{x - 1} = \frac{(x+3)(x-3)}{x-1}$$

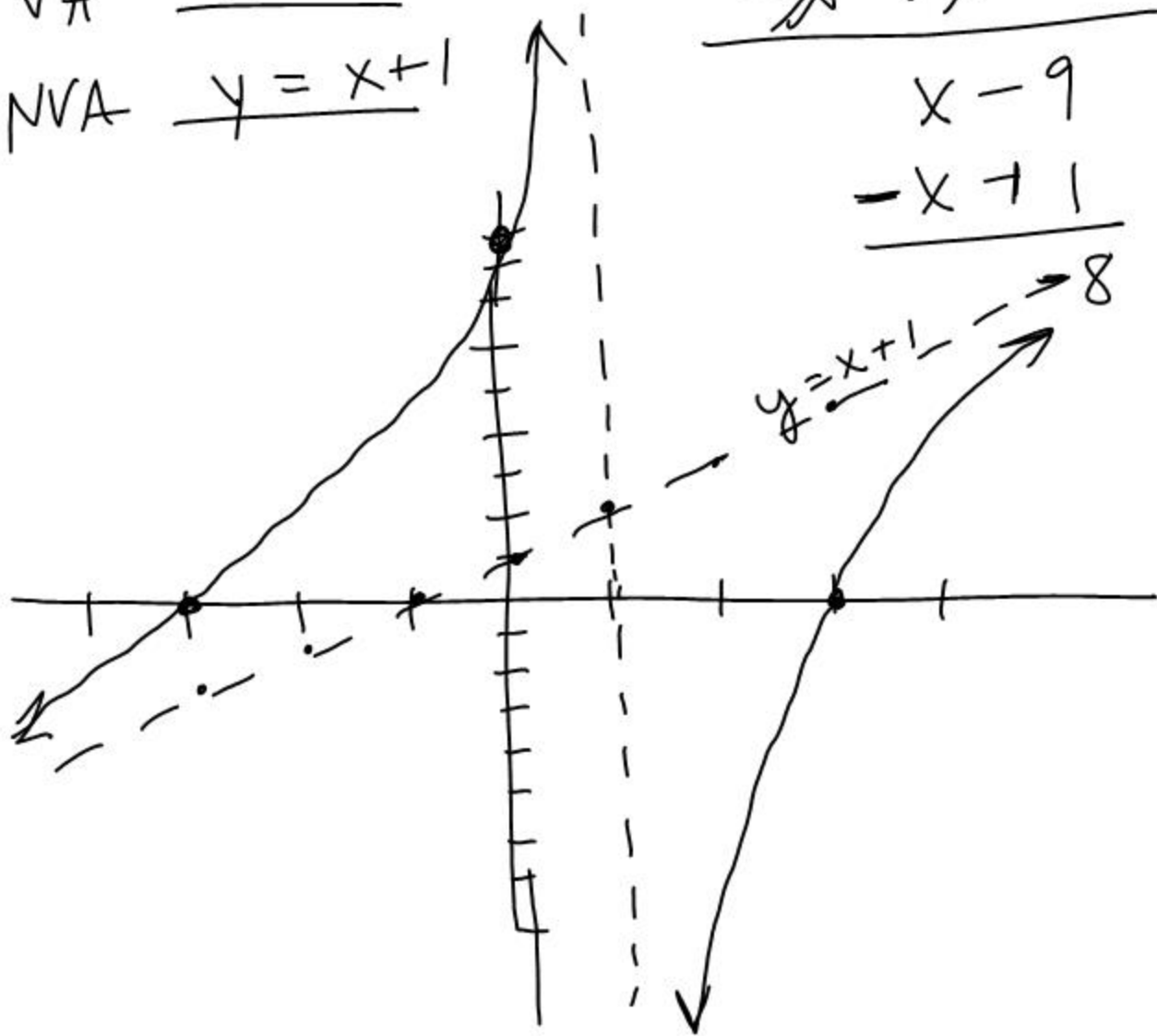
$$x\text{-int } \underline{\pm 3}$$

$$y\text{-int } \underline{9}$$

$$VA \quad \underline{x = 1}$$

$$NVA \quad \underline{y = x + 1}$$

$$\begin{array}{r}
 x + 1 - \frac{8}{x-1} \\
 \hline
 x-1 \overline{) x^2 - 9} \\
 \underline{-x^2 + x} \phantom{-9} \\
 x - 9 \\
 \underline{-x + 1} \\
 8
 \end{array}$$



Ex. (crosses H.A.)

$$y = \frac{x+1}{x(x+4)}$$

x-int -1

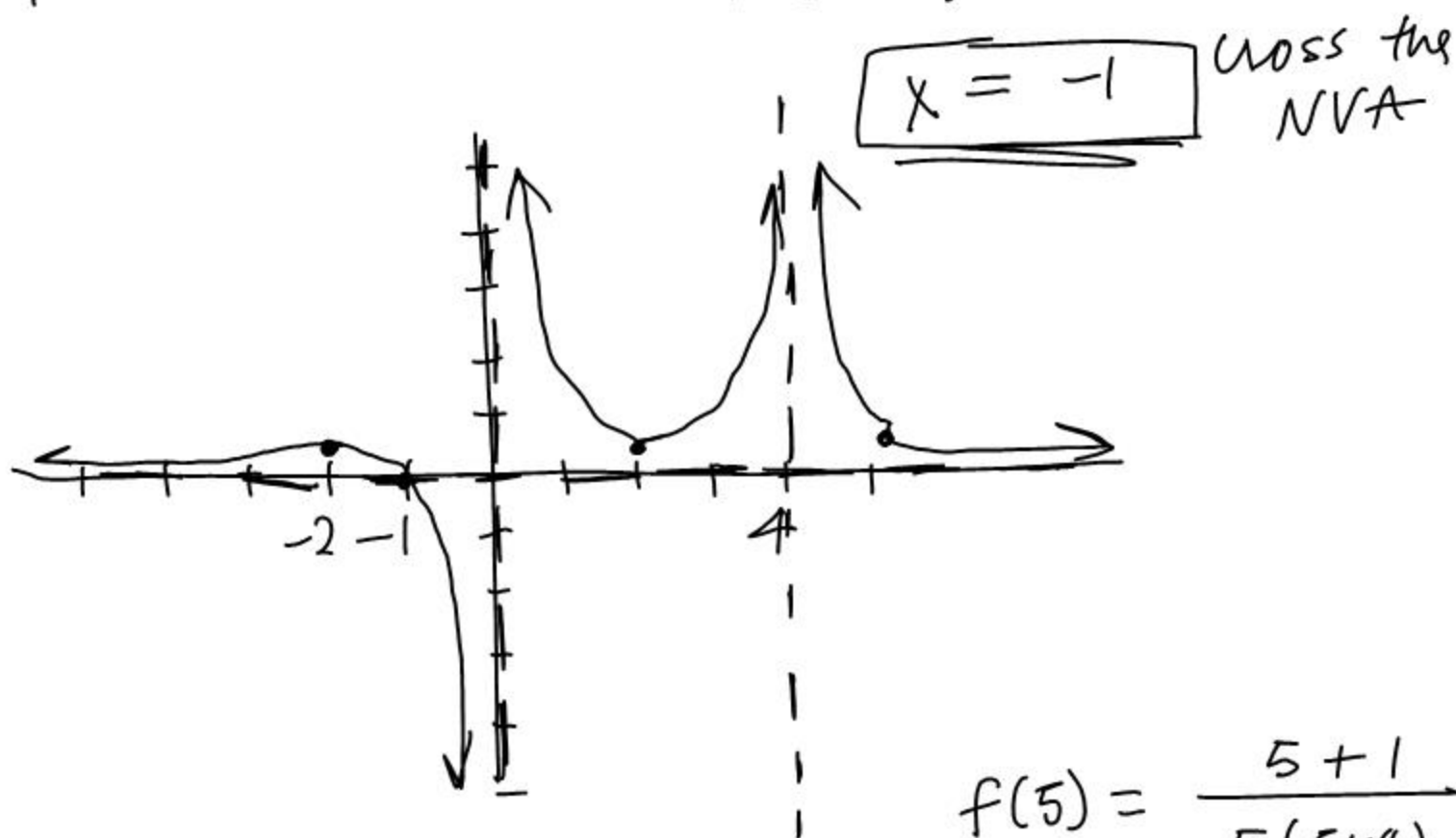
y-int none

VA  $x=0, x=-4$

NVA  $y=0$

~~1000~~  
~~1000000~~  
~~1000000~~  
~~1000000000000000000~~

$$\frac{x+1}{x(x+4)} = 0$$



$$f(-2) = \frac{-2+1}{-2(-2+4)} = \frac{+1}{+4}$$

$$f(2) = \frac{2+1}{2(2+4)} = \frac{3}{12} = \frac{1}{4}$$

$$f(5) = \frac{5+1}{5(5+4)} = \frac{6}{45} = \frac{2}{15}$$

p. 355 #72

$$f(x) = \frac{x^2 - 4}{x}$$

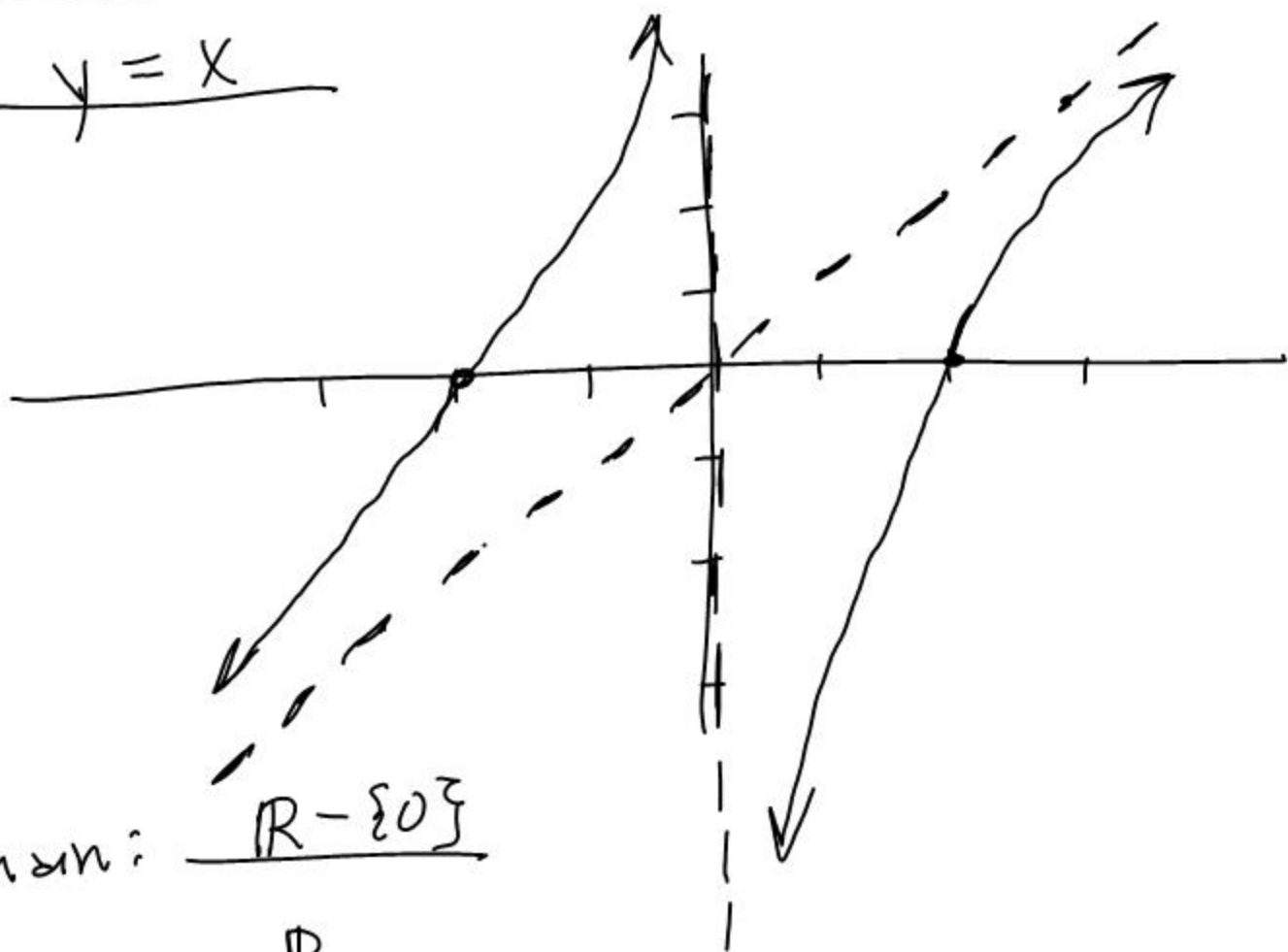
x-int  $\pm 2$

y-int none

VA  $x = 0$

NVA  $y = x$

$$\begin{array}{r} x - \frac{4}{x} \\ \hline x \overline{) x^2 - 4} \\ \underline{-x^2} \phantom{0} \\ -4 \end{array}$$



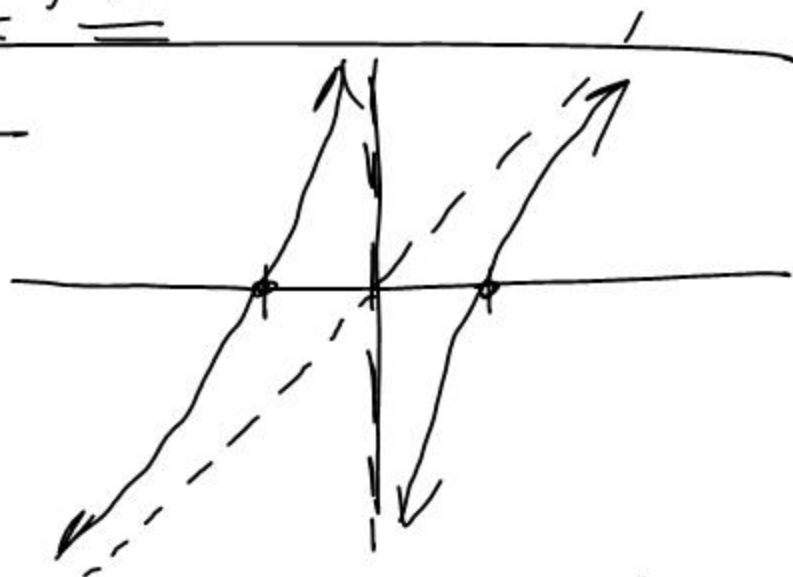
Domain:  $\mathbb{R} - \{0\}$

Range:  $\mathbb{R}$

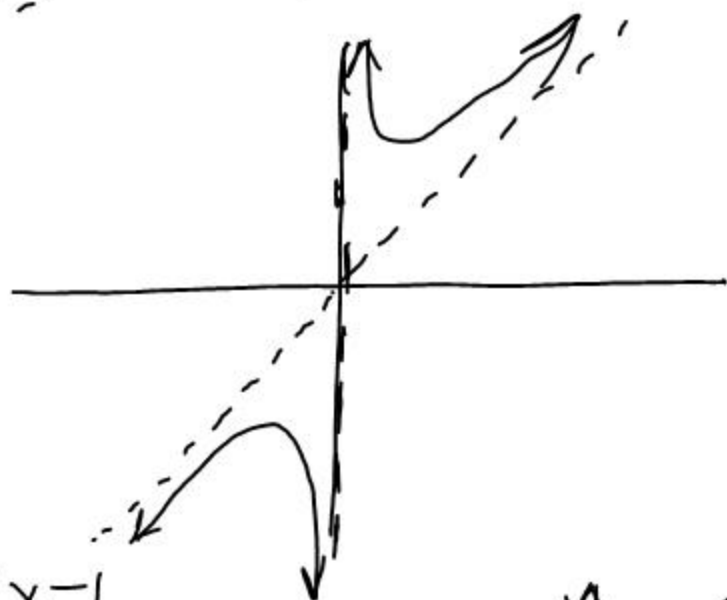
HW p. 355 #50, 51, 53, 57, 60,

# 71, 74, 78

#71. 
$$\begin{array}{r} x - \frac{1}{x} \\ x \overline{) x^2 - 1} \\ \underline{-x^2} \phantom{-1} \\ -1 \end{array}$$



#74. 
$$\begin{array}{r} x + \frac{4}{x} \\ x \overline{) x^2 + 4} \\ \underline{-x^2} \phantom{+4} \\ 4 \end{array}$$



#78. 
$$\begin{array}{r} x + \frac{9x-1}{x^2-9} \\ x^2-9 \overline{) x^3 - 1} \\ \underline{-x^3 + 9x} \phantom{-1} \\ 9x - 1 \end{array}$$

