#57. $y = \dfrac{-1}{x^2-4} = \dfrac{-1}{(x+2)(x-2)}$

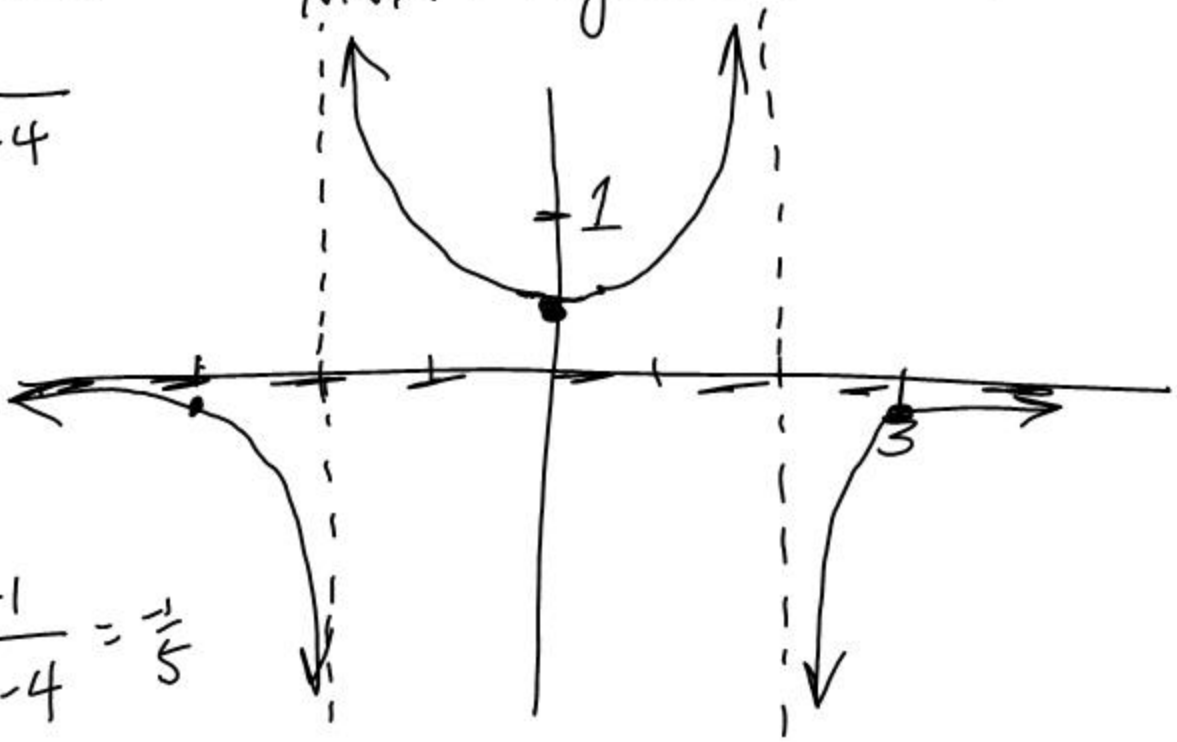
x-int none

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

$\dfrac{-1}{0^2-4}$

V.A. $x = \pm 2$

N.V.A. $y = 0$ (x-axis)



$f(3) = \dfrac{-1}{(3)^2-4} = \frac{-1}{5}$

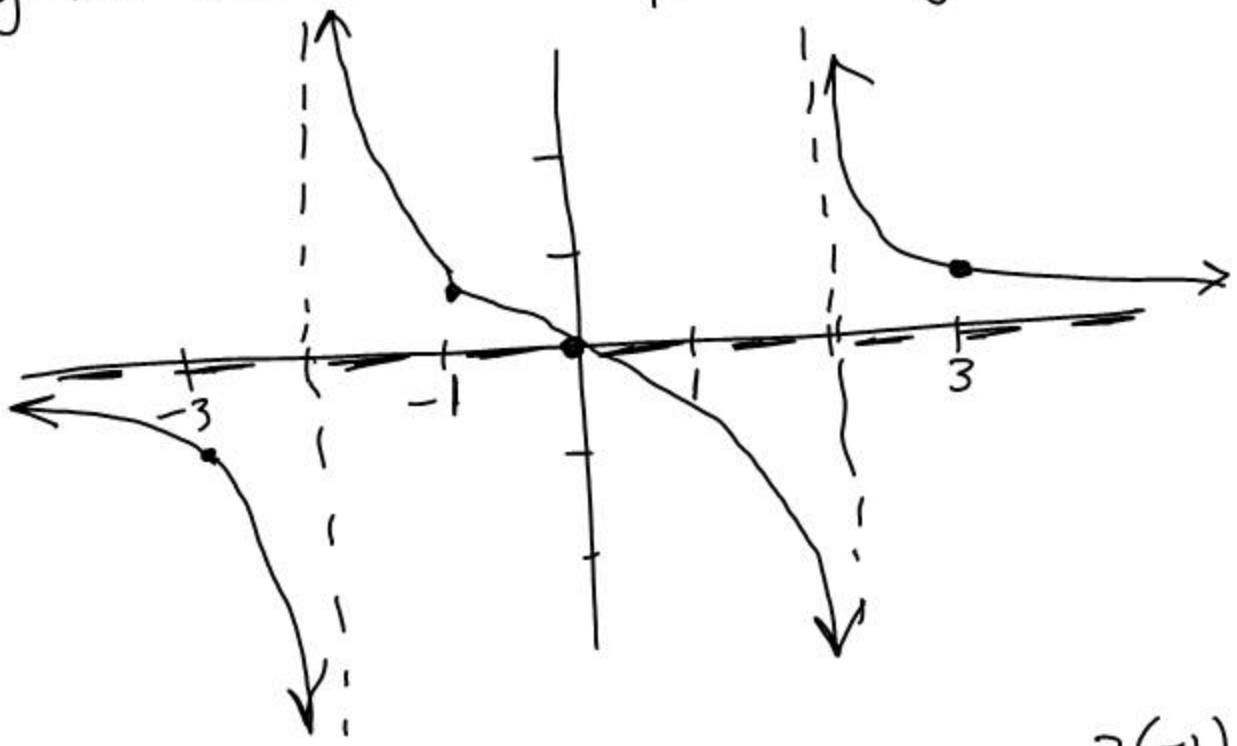
#51. $y = \dfrac{2x}{x^2-4} = \dfrac{2x}{(x+2)(x-2)}$

x-int 0

y-int 0

V.A. $x = \pm 2$

N.V.A. $y = 0$ (x-axis)



$f(-3) = \dfrac{2(-3)}{(-3)^2-4} = \dfrac{-6}{5}$

$f(-1) = \dfrac{2(-1)}{(-1)^2-4} = \dfrac{+2}{+3}$

$f(3) = \dfrac{2(3)}{3^2-4}$

$f(1) = \dfrac{2(1)}{1^2-4}$

#74 $y = \dfrac{x^2+4}{x} = x + \dfrac{4}{x}$

$$x \overline{)\, x^2 + 4} \quad (x + \tfrac{4}{x})$$

$-x^2$

4

x-int none

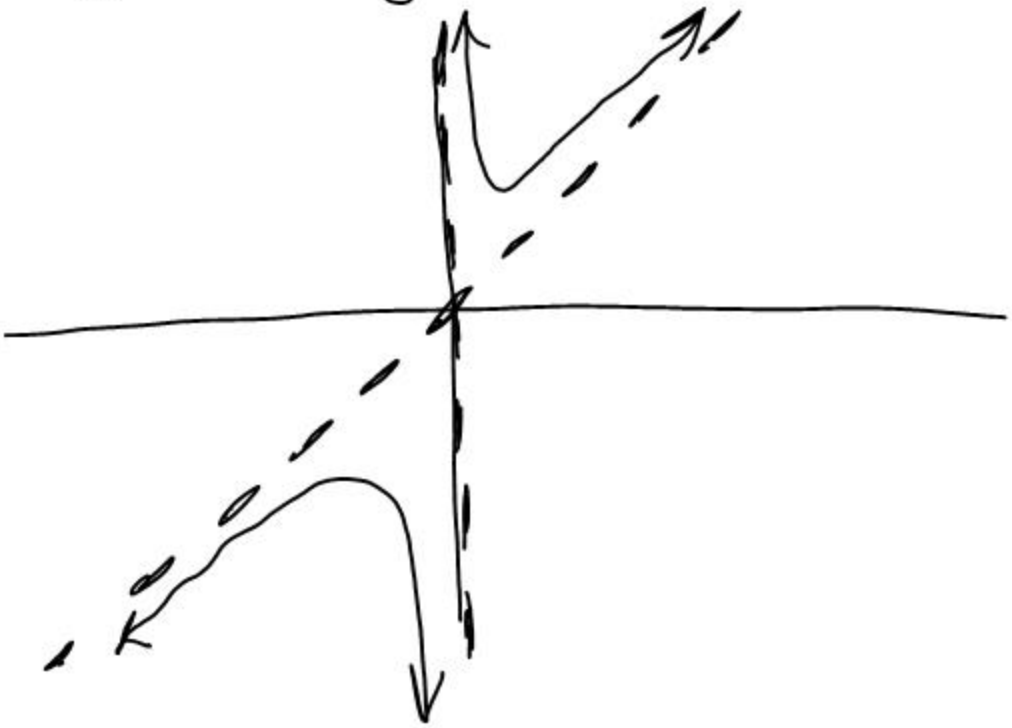
y-int none

V.A. $x = 0$ (y-axis)

N.V.A. $y = x$

$x^2 + 4 = 0$

$x^2 = -4$



Removable Discontinuities

Ex. $f(x) = \dfrac{x+1}{x^2-1} = \dfrac{\cancel{x+1}}{\cancel{(x+1)}(x-1)}$

domain: $\mathbb{R} - \{\pm 1\}$

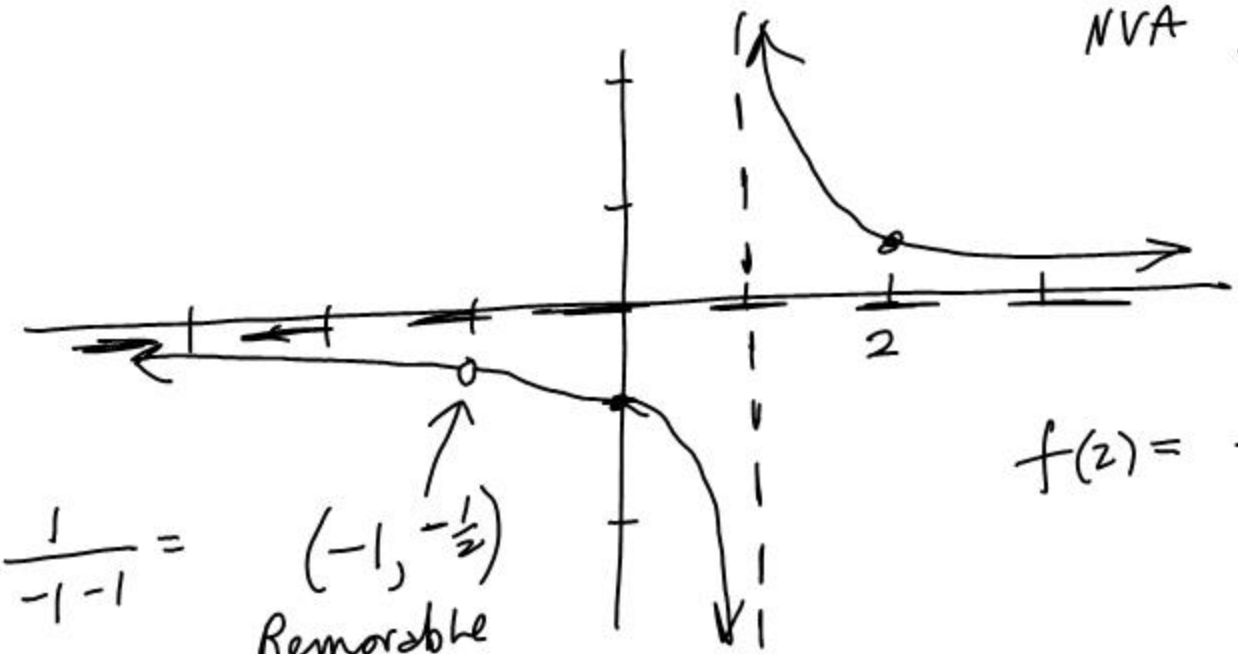
$$f(x) = \frac{1}{x-1}, \quad x \neq -1$$

x-int: none

y-int: -1

VA: $x = 1$

NVA: $y = 0$



$\dfrac{1}{-1-1} = (-1, -\frac{1}{2})$

Removable discontinuity ("hole")

$f(2) = \dfrac{1}{2-1} = 1$

Ex. $y = \dfrac{x^2 - x - 2}{x^2 - 3x + 2} = \dfrac{(x+1)(x-2)}{(x-1)(x-2)}$

$$y = \frac{x+1}{x-1}, \quad x \neq 2$$

x-int -1

y-int -1

VA $x = 1$

NVA $y = 1$

R.D. $(2, 3)$