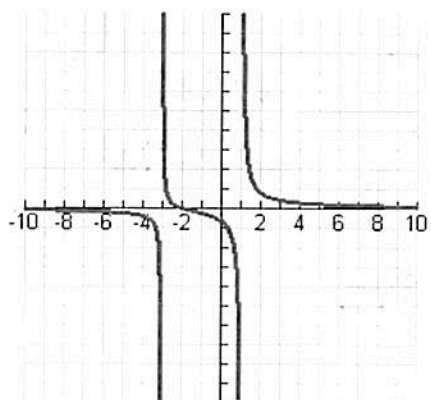


Elaborate: Mega Match

1.



$$\text{Equation } f(x) = \frac{x+2}{x^2+2x-3} = \frac{x+2}{(x-1)(x+3)}$$

Horizontal Asymptote

$$y = 0$$

Vertical Asymptote

$$x = 1, x = -3$$

Domain

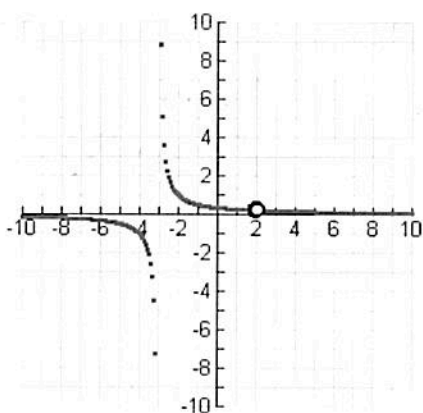
$$x \neq 1, x \neq -3$$

Range

~~all real #'s~~ all real #'s

No hole

2.



$$\text{Equation } f(x) = \frac{x-2}{x^2+x-6} = \frac{\cancel{(x-2)}}{(x+3)(x-2)}$$

Horizontal Asymptote

$$y = 0$$

Vertical Asymptote

$$x = -3$$

Domain

$$x \neq -3, 2$$

Range

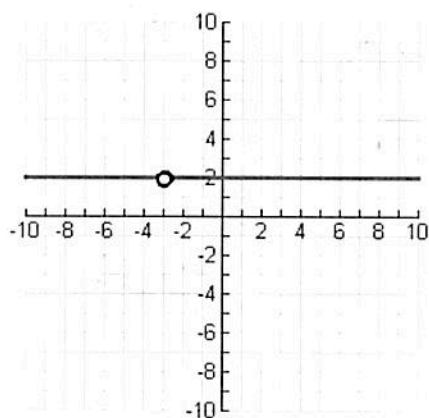
$$y \neq 0, 1/5$$

$$\frac{1}{x+3}$$

Hole

$$(2, 1/5)$$

3.



$$\text{Equation } f(x) = \frac{2x+6}{x+3} = \frac{2(x+3)}{(x+3)} = 2$$

Horizontal Asymptote

None

Vertical Asymptote

None

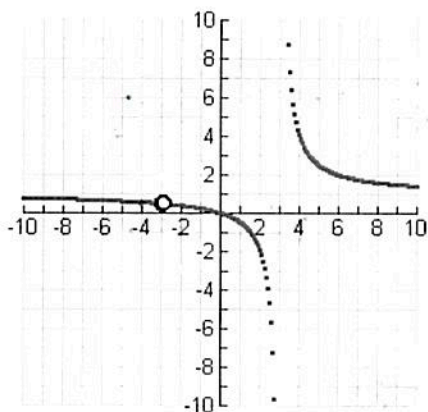
Domain

$$x \neq -3$$

Range

$$y = 2$$

4.



$$\text{Equation } f(x) = \frac{x^2+3x}{x^2-9} = \frac{x(x+3)}{(x+3)(x-3)}$$

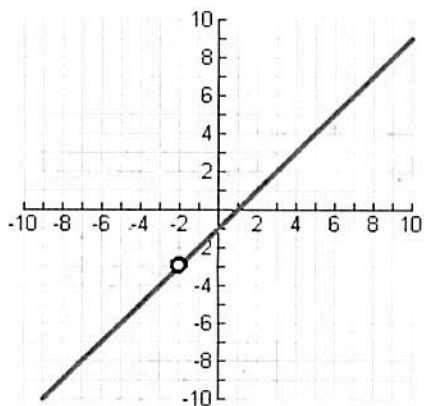
Horizontal Asymptote $y=1$ Vertical Asymptote $x=3$ Domain $x \neq 3, x \neq -3$ Range $y \neq 1, y \neq +1/2$

$$\text{Hole } \rightarrow \frac{x}{x-3}$$

$$(-3, +1/2)$$

$$\frac{-3}{-3-3}$$

5.



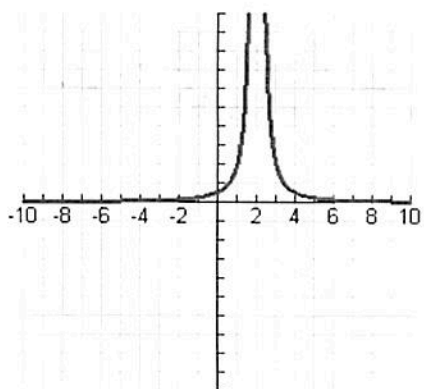
$$\text{Equation } f(x) = \frac{x^2+x-2}{x+2} = \frac{(x+2)(x-1)}{(x+2)} \rightarrow x-1$$

Horizontal Asymptote None

Vertical Asymptote None

Domain $x \neq -2$ Range $y \neq -3$ Hole
 $(-2, -3)$

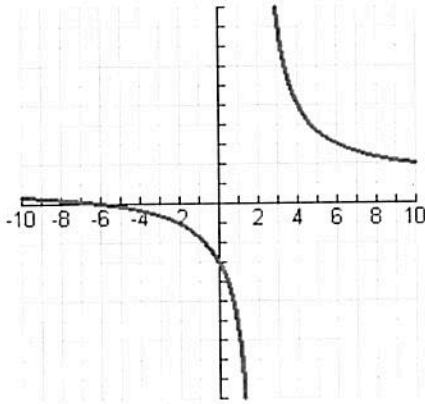
6.



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

Horizontal Asymptote $y=0$ Vertical Asymptote $x=2$ Domain $x \neq 2$ Range ~~$y \neq 0$~~
 $y > 0$ No
HOLE

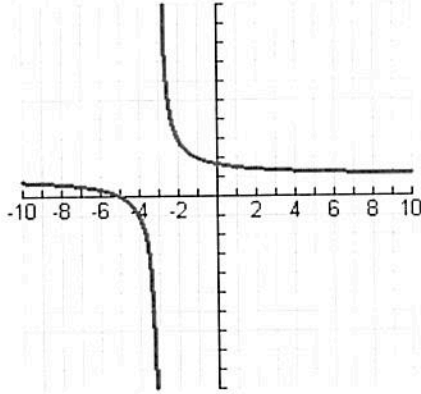
7.



Equation $f(x) = \frac{x+6}{x-2}$

Horizontal Asymptote $y=1$ Vertical Asymptote $x=2$ Domain $x \neq 2$ Range $y \neq 1$ NO
HOLE.

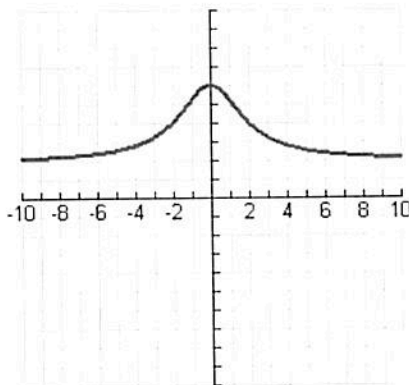
8.



Equation $y = \frac{x+5}{x+3}$

Horizontal Asymptote $y=1$ Vertical Asymptote $x=-3$ Domain $x \neq -3$ Range $y \neq 1$ NO
HOLE

9.



Equation $f(x) = \frac{2x^2+24}{x^2+4}$

Horizontal Asymptote $y=2$

Vertical Asymptote None

Domain all real #'s

Range $2 < x \leq 6$ NO
HOLE