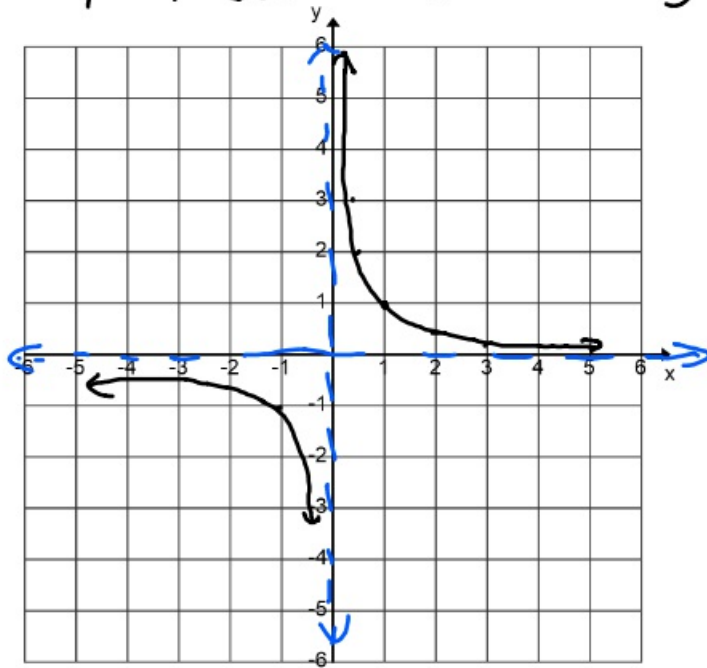


1-9-20 4th Trig



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

Horizontal Asymptotes

Bobo

$$y=0$$

Botn

None

Eats DC

divide coefficients

$$\textcircled{1} f(x) = \frac{4x^5 + 6x^3 - 1}{2x^5 - 7}$$

Eats DC

$$y = \frac{4}{2}$$

$$y = 2$$

$$\textcircled{2} f(x) = \frac{8x^4 - 6x^2 + 2}{5x - 7}$$

Bobo

Botn

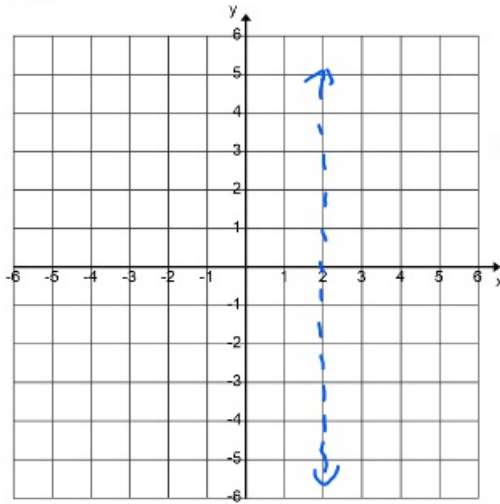
None

Eats DC

$$\textcircled{3} f(x) = \frac{7x^2 - 5}{10x^5 + 1}$$

Bubo Boza Entz DC

$$y=0$$



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

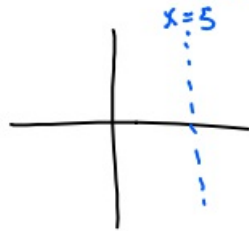
Vertical Asymptotes

Set denominator = 0

$$\textcircled{4} f(x) = \frac{8x^{1000}}{\textcircled{2x-10}}$$

$$2x - 10 = 0$$

$$x = 5$$



$$\textcircled{5} f(x) = \frac{4}{x^2 + 5x - 6}$$

$$x^2 + 5x - 6 = 0$$

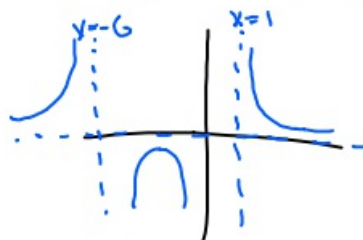
$$(x+6)(x-1) = 0$$

$$x+6=0$$

$$x-1=0$$

$$x = -6$$

$$x = 1$$



$$\textcircled{6} f(x) = \frac{x^2}{x^2 - 16}$$

$$x^2 - 16 = 0$$

$$(x+4)(x-4) = 0$$

$$x+4=0 \quad x-4=0$$

$$x=-4 \quad x=4$$

Slant asymptote when
numerator is 1 degree
higher than denominator

$$\textcircled{7} f(x) = \frac{x^2 + 7x - 1}{x + 5}$$

$$\begin{array}{r} x+2 \\ x+5 \overline{) x^2 + 7x - 1} \\ \underline{-(x^2 + 5x)} \\ 2x - 1 \\ \underline{2x + 10} \end{array}$$

Remainder doesn't matter

Slant at $y = x + 2$

$$\textcircled{8} f(x) = \frac{x^2 + 5x + 1}{x + 4}$$

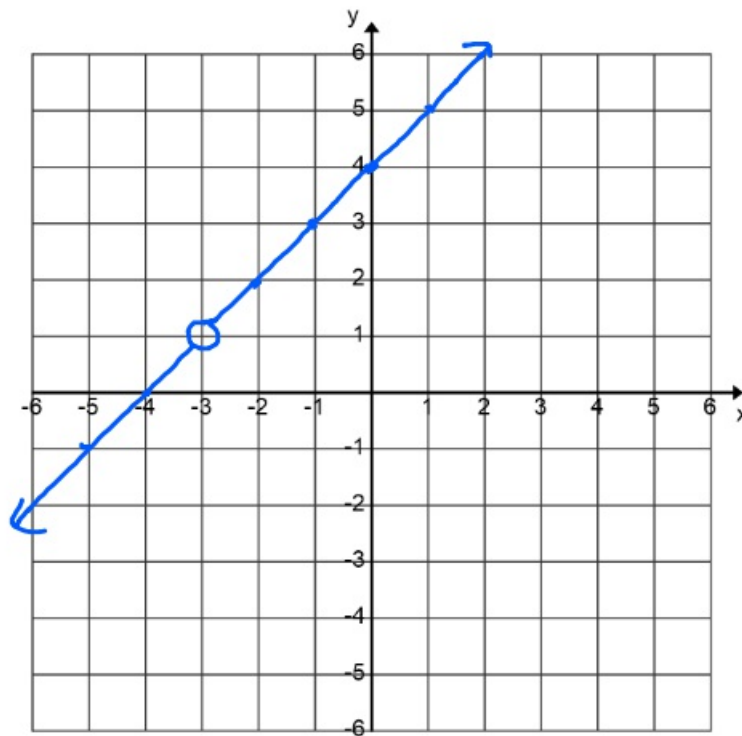
$$\begin{array}{r} x+1 \\ x+4 \overline{) x^2 + 5x + 1} \\ \underline{-(x^2 + 4x)} \\ x + 1 \\ \underline{x + 4} \\ x \end{array}$$

$y = x + 1$

$$\textcircled{9} f(x) = \frac{x^2 + 7x + 12}{x + 3}$$

$$\frac{\cancel{(x+3)}(x+4)}{\cancel{x+3}}$$

$$f(x) = x + 4 \quad [x = -3]$$



$$\textcircled{10} f(x) = \frac{x^2 + 4x + 3}{x + 2}$$

Is there a hole? Explain

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

There would be a slant asymp.