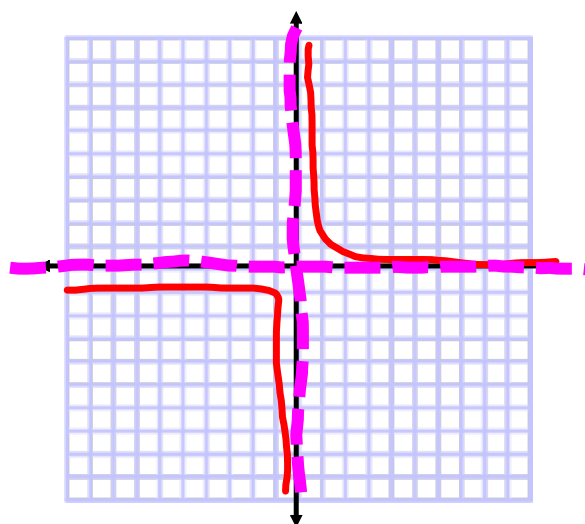


Recall the function $f(x) = \frac{1}{x}$

Characteristics

Asymptotes

$x=0$, $y=0$



And the transformations of $f(x)$

$$\underline{y = a f(k(x-d)) + c}$$

$$y = a f(k(x-d)) + c$$

$$y = a (k(x-d))^2 + c$$

$$y = a \sin(k(x-d)) + c$$

if $f(x) = \frac{1}{x}$

$$y = \frac{a}{k(x-d)} + c$$

$$y = a f(k(x-d)) + c$$

$$y = a \left(\frac{1}{k(x-d)} \right) + c$$

$$y = \frac{a}{k(x-d)} + c$$

Determine the x and y intercepts of

$$y = \frac{1}{2x-5}$$

y-int ($x=0$)

$$y = -\frac{1}{5}$$

x-int ($y=0$)

$$0 = \frac{1}{2x-5}$$

$0 = 1 \therefore$ No
x-int

Given the function $y = \frac{1}{2x-5}$

a) State the domain of the function

$$D \rightarrow \left\{ x \in \mathbb{R} \mid x \neq \frac{5}{2} \right\}$$

$$\begin{aligned} \downarrow 2x-5 &= 0 \\ 2x &= 5 \\ x &= \frac{5}{2} \end{aligned}$$

b) Determine vertical and horizontal asymptotes.

$$V.A. \rightarrow x = \frac{5}{2}$$

$$H.A. \rightarrow \text{as } x \rightarrow \infty$$

$$\downarrow \\ y = 0$$

$$f(x) \rightarrow 0$$

$$\text{as } x \rightarrow \infty$$

$$f(x) \rightarrow 0$$

c) Determine the behavior at the function approaches the asymptotes.

as $x \rightarrow \frac{5}{2}$ from the left

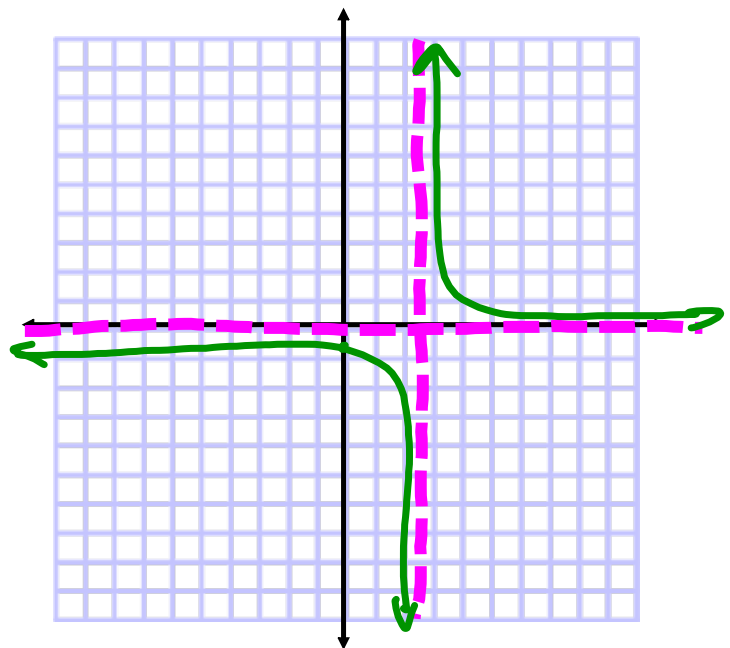
$$f(x) \rightarrow -\infty$$

as $x \rightarrow \frac{5}{2}^+$ from the right

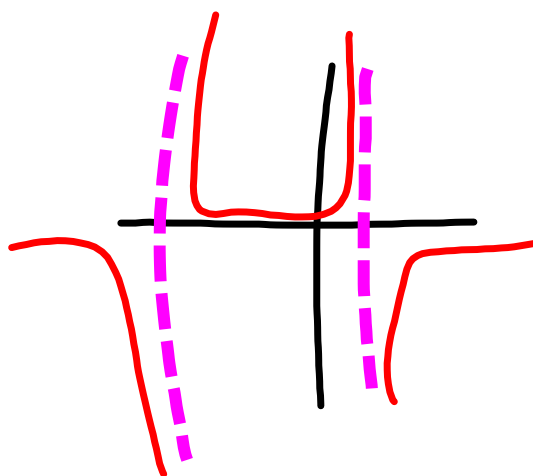
$$f(x) \rightarrow \infty$$

d) Sketch a graph of the function.

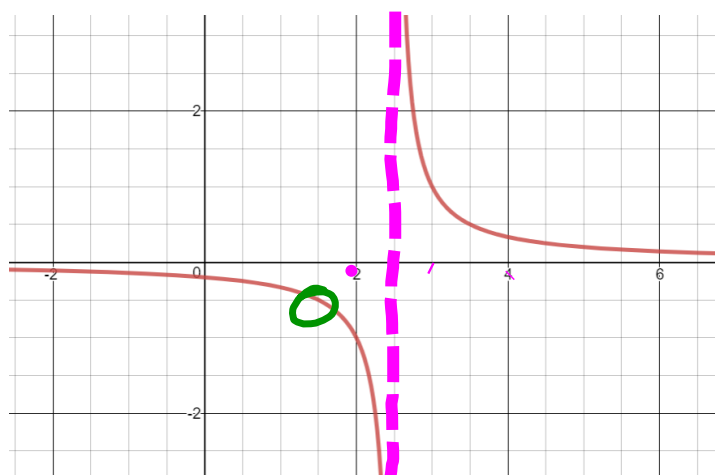
$$f(x) = \frac{1}{2x-5}$$



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



Determine a possible equation for the following graph.



$$x \neq \frac{5}{2}$$

$$2x \neq 5$$

$$2x - 5 \neq 0$$

$$\therefore f(x) = \frac{2}{2x - 5}$$

GAME DAY @ J.V.

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