

# Graphs of Rational Functions



## Overview of problems



Example Set: A

identify the horizontal and vertical asymptotes of the functions graph

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

$$f(x) = \frac{3x}{x^2-16}$$

$$f(x) = \frac{12x^4 + 5x^3 - x + 7}{3x^4}$$

$$f(x) = \frac{4x^2 + 10}{6x^2 - 12}$$

$$f(x) = \frac{9x^4 + x^2}{6x + 18}$$

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



Example Set: B

sketch the graph of the rational function

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



Example Set: C

sketch the graph of the rational function

$$f(x) = \frac{6x+1}{x^2-1}$$



Example Set: D

sketch the graph of the rational function

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

# Graphs of Rational Functions



## Overview of problems- KEY



Example Set: A

identify the horizontal and vertical asymptotes of the functions graph

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

$$\text{VA: } x=6 \quad \text{HA: } y=0$$

$$f(x) = \frac{3x}{x^2-16}$$

$$\text{VA: } x=\pm 4 \quad \text{HA: } y=0$$

$$f(x) = \frac{12x^4 + 5x^3 - x + 7}{3x^4}$$

$$\text{VA: } x=0 \quad \text{HA: } y=4$$

$$f(x) = \frac{4x^2 + 10}{6x^2 - 12}$$

$$\text{VA: } x=\pm\sqrt{2} \quad \text{HA: } y=\frac{2}{3}$$

$$f(x) = \frac{9x^4 + x^2}{6x + 18}$$

$$\text{VA: } x=-3 \quad \text{HA: none}$$

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

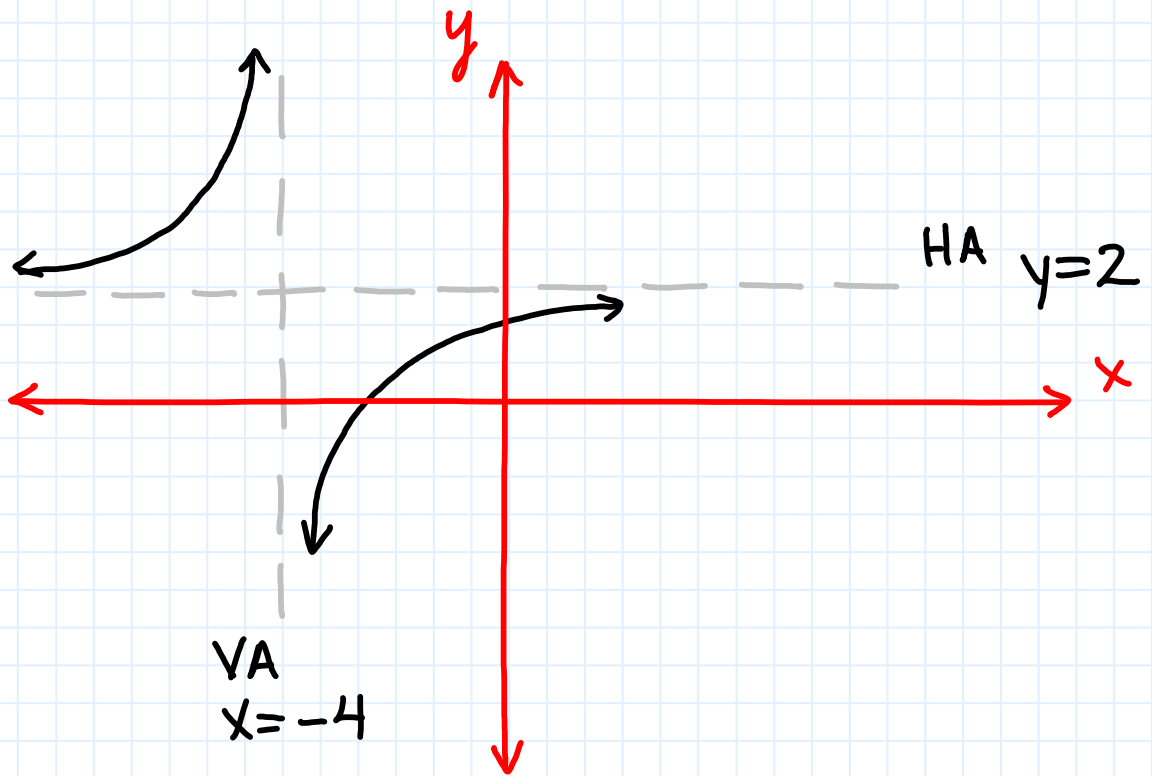
$$\text{VA: } x=1 \quad \text{HA: none}$$



## Example Set: B

sketch the graph of the rational function

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

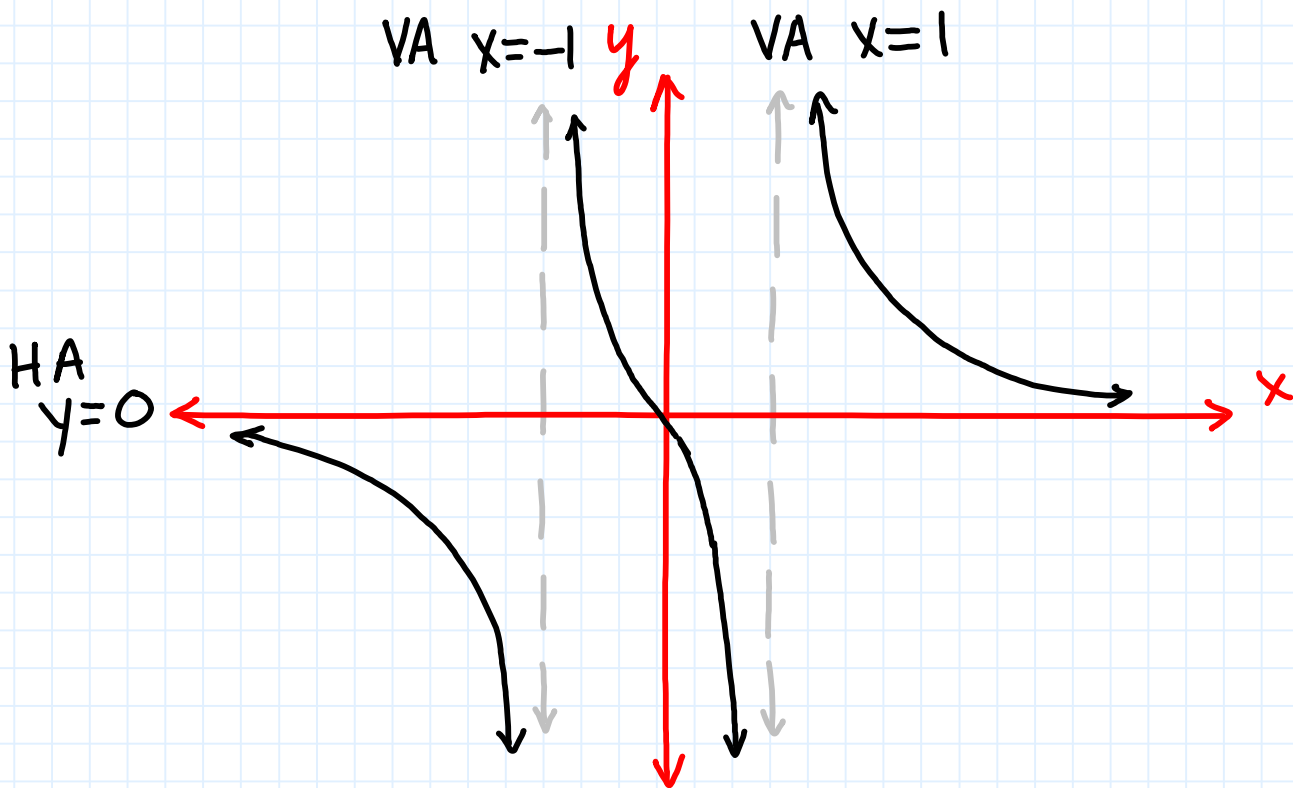




## Example Set: C

sketch the graph of the rational function

$$f(x) = \frac{6x + 1}{x^2 - 1}$$





## Example Set: D

sketch the graph of the rational function

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

VA  $x=0$     VA  $x=4$

