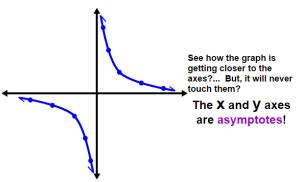
## FINDING ASYMPTOTES

## Graphs hug asymptotes.

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



Asymptotes are lines (usually invisible) in space that a graph gets closer and closer to but never touches...

## **VERTICAL ASYMPTOTES**

Set the denominator = 0 and solve.

## HORIZONTAL ASYMPTOTES

Given some polynomial guy

$$f(x) = \frac{ax^n + \dots}{bx^m + \dots}$$
 \leftarrow \text{nth degree polynomial} \text{\leftarrow mth degree polynomial}

- If n < m , then the x-axis is the horizontal asymptote.
- If n = m, then the horizontal asymptote is the line  $\gamma = \frac{a}{b}$ .
- If \( \) > \( \) , then there is no horizontal asymptote. (There is a slant diagonal or oblique asymptote.)

$$f(x) = \frac{x+1}{x^2 + 6x + 8}$$

$$f(x) = \frac{1}{x+4}$$

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

$$y = \frac{x-2}{x^2+4}$$

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

$$f(x) = \frac{2x+1}{x^2 - 9}$$