

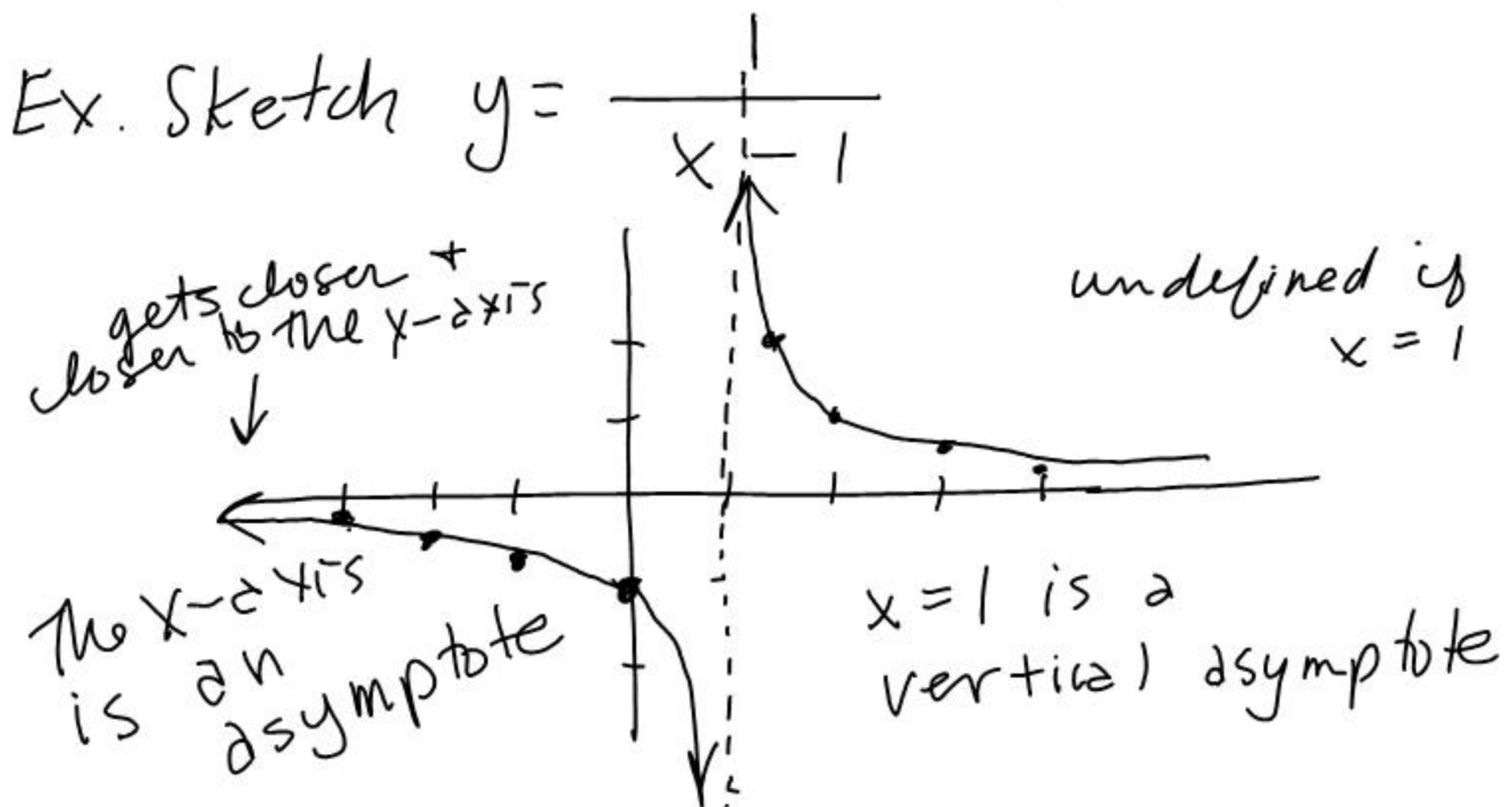
Rational Functions

A ratio of 2 polynomials

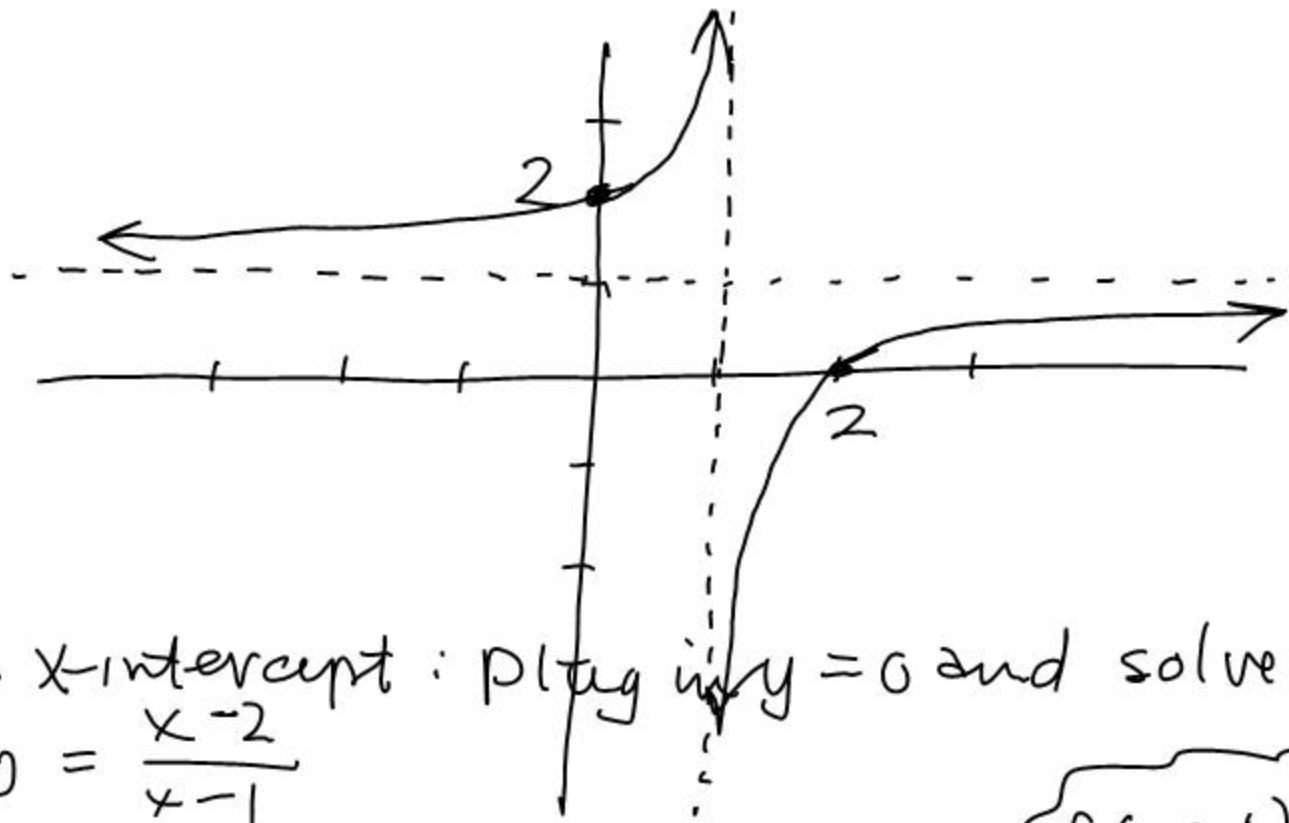
Ex. $y = \frac{x}{3x+4}$ rational /
not a polynomial

Ex. $y = \frac{\sqrt{x}}{x^2+4}$ not rational

Ex. $y = \frac{x^2+3x+2}{5}$ not a
rational
function
 $= \frac{1}{5}x^2 + \frac{3}{5}x + \frac{2}{5}$



Ex. Sketch $y = \frac{x-2}{x-1}$



- x-intercept: plug in $y=0$ and solve for x

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

$$0 = x-2 \rightarrow x=2$$

- Vertical asymptote (VA)

at $x=1$ (1 makes the function undefined)

$$f(1001) = \frac{999}{1000} = 0.999$$

- Horizontal asymptote (HA) at $y=1$

because as $x \rightarrow \infty$ or $x \rightarrow -\infty$,
 y get close to 1.

- y-intercept: plug in $x=0$