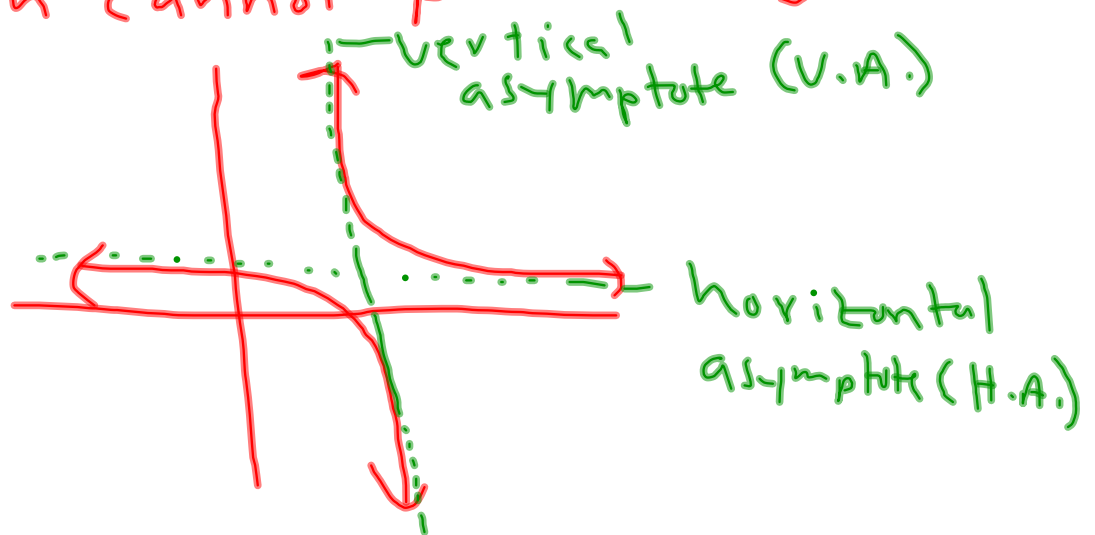




## 7.6 Graphing Rational Expressions

Asymptotes: imaginary lines a graph cannot pass through.

Ex:



Find asymptotes: let  $f(x) = \frac{p(x)}{q(x)}$ , then

①  $f(x)$  has a V.A. at all  $x$  where  $q(x)=0$

②  $f(x)$  has a H.A. if:

i) the degree of  $p(x) < q(x)$ , then  $y=0$  is the H.A.

ii) the degree of  $p(x) = q(x)$ , then  $y = \frac{a}{b}$  is the H.A. where  $a$  is the leading coefficient of  $p(x)$  and  $b$  is the leading coefficient of  $q(x)$

iii) the degree of  $p(x) > q(x)$ , then there is no H.A.

Find the v.A. and H.A. of

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

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

$$h(x) = \frac{x^2}{x-7}$$

To graph, find all asymptotes, and draw them in, then use our calculator to find "3" points on either side of the asymptote.

Sketch the graph of

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



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

p. 483, 4-44 every other  
even,  
every even E.C.