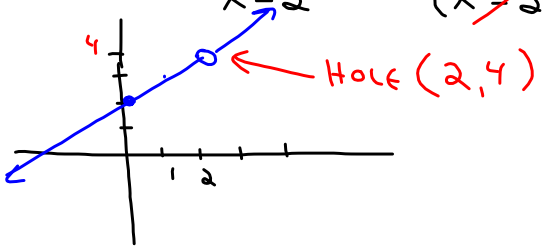
2.5 Graphs of Rational Functions

Investigate p 115 using TI-83

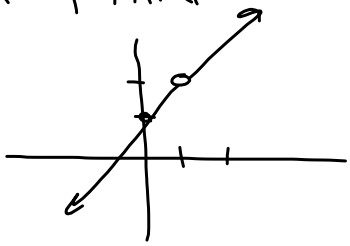
and answer all questions on p 115 and p 116

A: $f(x) = \frac{x^2-4}{x-2} = \frac{(x-2)(x+2)}{(x-2)} = x+2, x \neq 2$

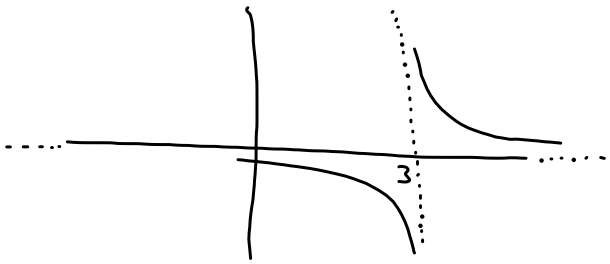


B: $f(x) = \frac{x^2-1}{x-1} = \frac{(x-1)(x+1)}{(x-1)} = x+1, x \neq 1$

@ $x = 1$ there is a hole $(1, 2)$

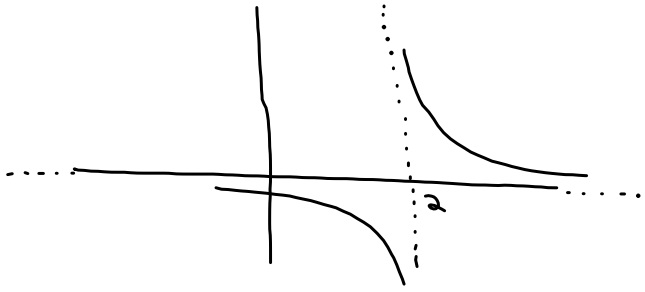


C: $g(x) = \frac{1}{x-3}$



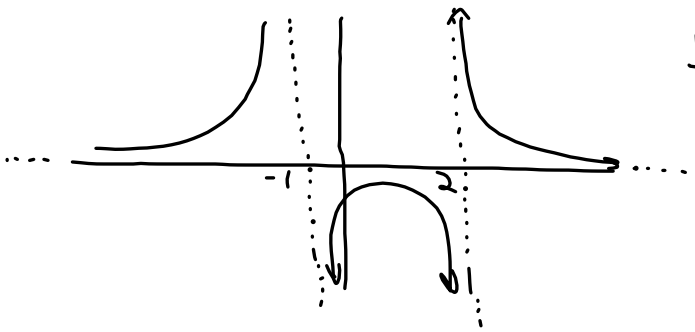
There is a vertical asymptote @ $x = 3$

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



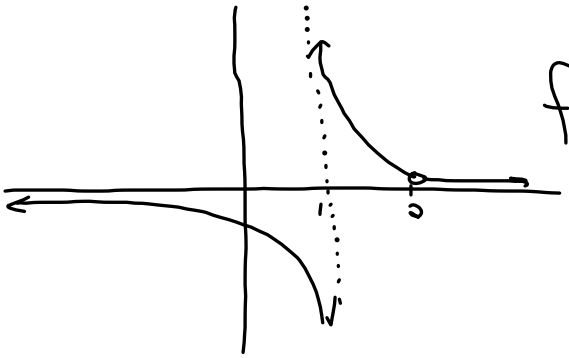
Vertical asymptote @ $x = 2$

E:



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

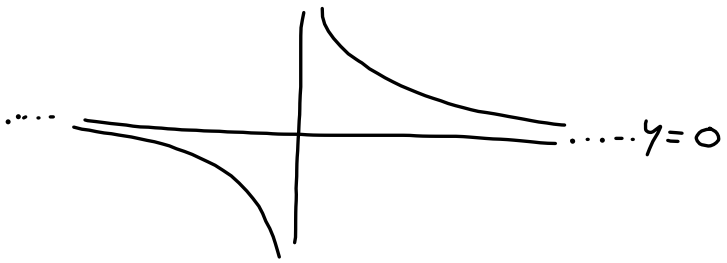
F: VA @ $x=1$, Hole @ $x=2$.

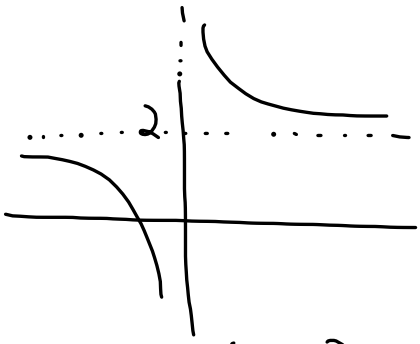


$$f(x) = \frac{x-2}{(x-1)(x-2)} = \frac{1}{x-1}, x \neq 2$$

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

G: $h(x) = \frac{1}{x}$

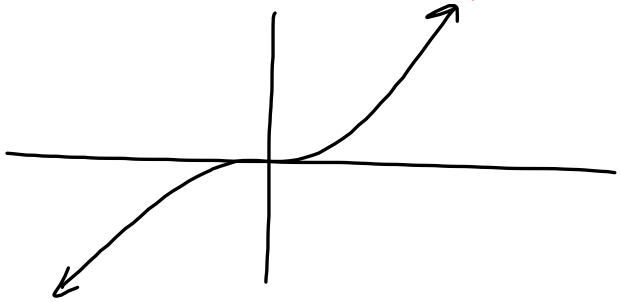




$$f(x) = \frac{1}{x} + 2$$

H: $f(x) = \frac{x^3}{x^2+1}$

NO HOLES, NO VA, NO HA.



I : SUMMARY.

$f(x) = \frac{x-a}{x-a}$ HAS A HOLE @ $x=a$

$f(x) = \frac{1}{x-a}$ HAS A VA. AT $x=a$

$f(x) = \frac{1}{(x-a)(x-b)}$ HAS VERTICAL ASYMPTOTES OF $x=a$ & $x=b$

$f(x) = \frac{1}{x} + b$ HAS HORIZONTAL ASYMPTOTE $y=b$

$f(x) = \frac{x-a}{(x-a)(x-b)}$ HAS A HOLE @ $x=a$ AND VA $x=b$.

HW. p116 J, K, L, #1, 2, 3