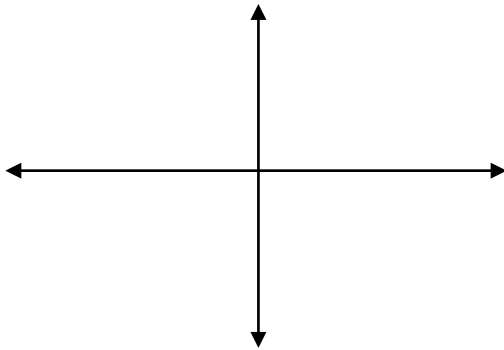


*Reciprocals of Polynomials*

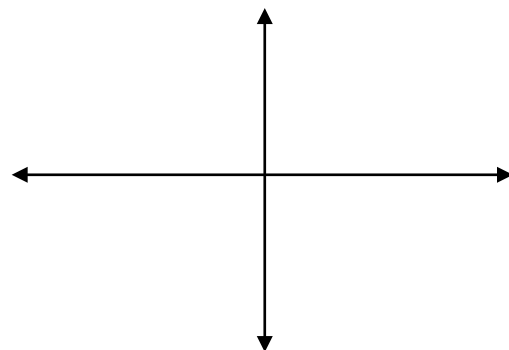
## Problem 1

- a. Using the window  $[-6, 6] \times [-8, 8]$ , sketch the graphs of the following functions with your calculator.

$$f(x) = \frac{10}{(x+3)(x-1)^2}$$



$$g(x) = \frac{10}{(x+3)^2(x-1)}$$

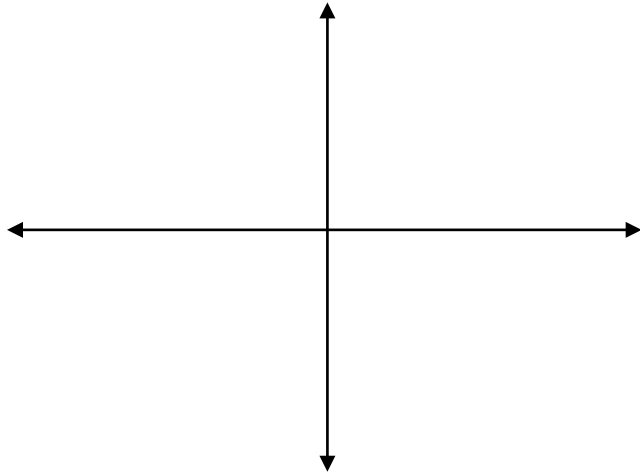


- b. State the domain of  $f$  and  $g$ .
- c. Write the equations of all of the asymptotes for both  $f$  and  $g$ .
- d. How do the even and odd exponents of the factors in the denominators affect the graphs?
- e. Is this consistent with your work on Sheet 1 that considered  $\frac{1}{x^n}$ ? Explain.

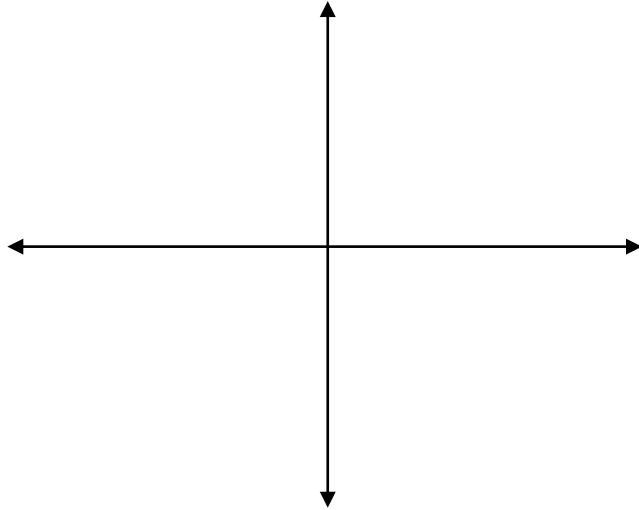
## Problem 2

Sketch the graphs of the following functions and their reciprocals. Mark the key  $x$ -values and state the equations of all asymptotes.

$$f(x) = \frac{10}{(x+3)(x-1)(x-4)}$$



$$g(x) = \frac{(x-2)^2(x+1)}{5}$$



From your experiences on the Rats sheets so far, state clearly the patterns you've seen about the graphs of these functions, their reciprocals, roots, and asymptotes.