Caluclus AB NAME: _____

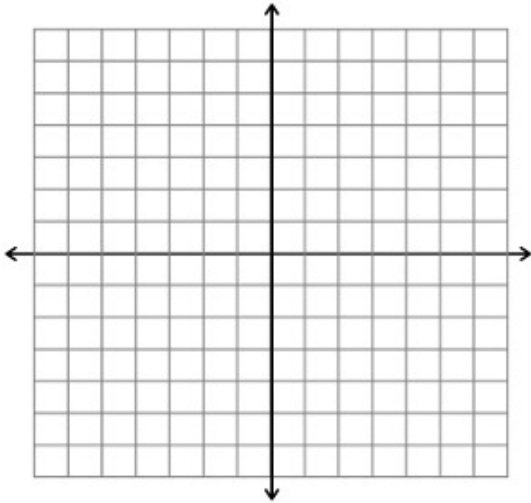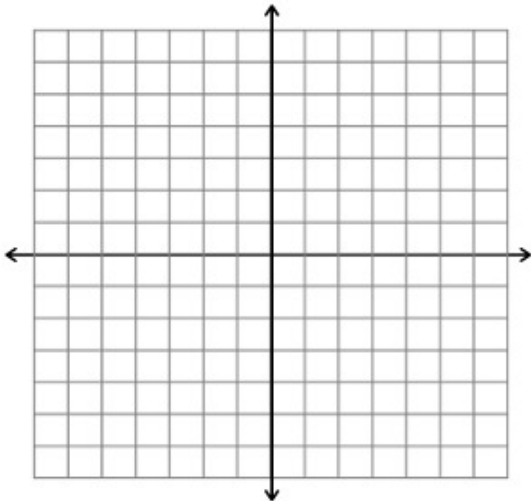# Worksheet 6 - Rational Functions

For each rational function given below, do the following:

(a) Identify any holes, zeros and vertical asymptotes.

(b) Indentify the horizontal or slant asymptote or give the end behavior.

(c) Find the $y$-intercept.

(d) Give a sign chart.

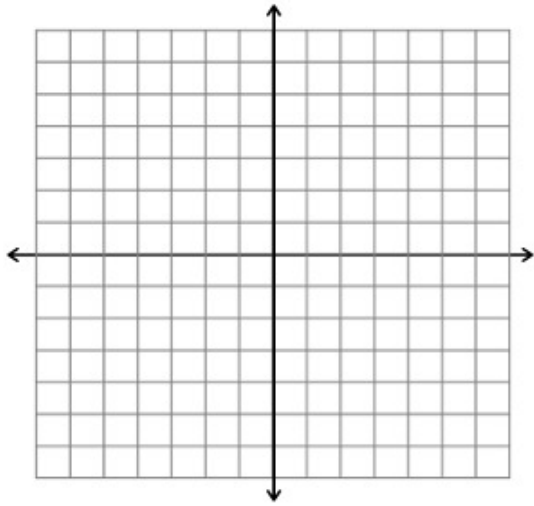(e) Sketch the graph clearly showing the end-behavior, zeros, and $y$-intercept.

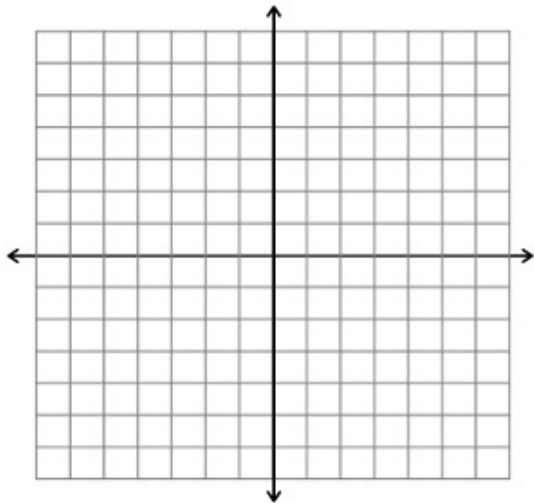1. $f(x) = \dfrac{-(x+1)^2(x-1)^3}{(5-x)(x-1)^2}$



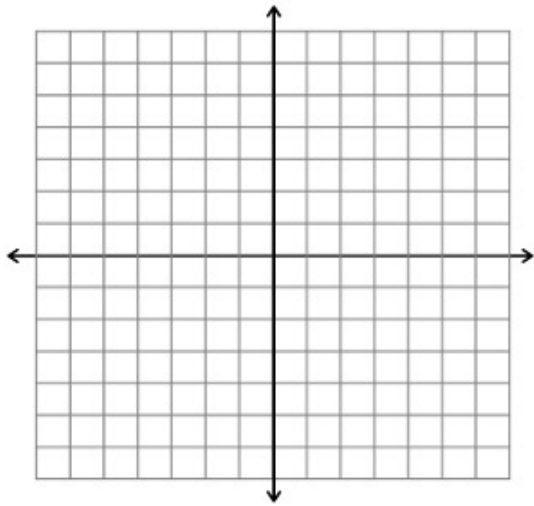2. $f(x) = \dfrac{-(x+1)^2(x-1)^2}{(5-x)(x-1)^4}$

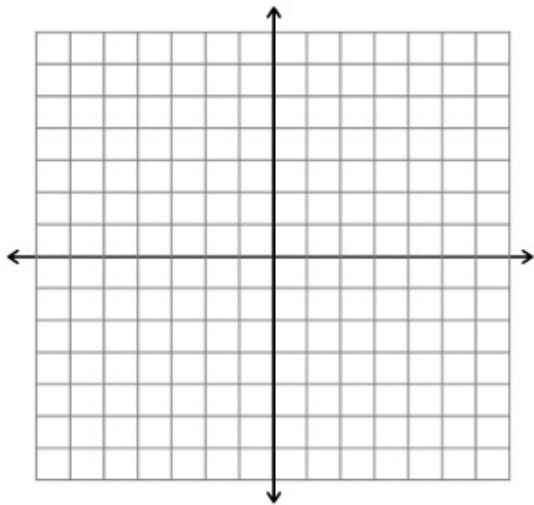3. $f(x) = \dfrac{-(x+5)(4-2x)(6+3x)(x+1)^2}{(5-x)(x-1)^2}$

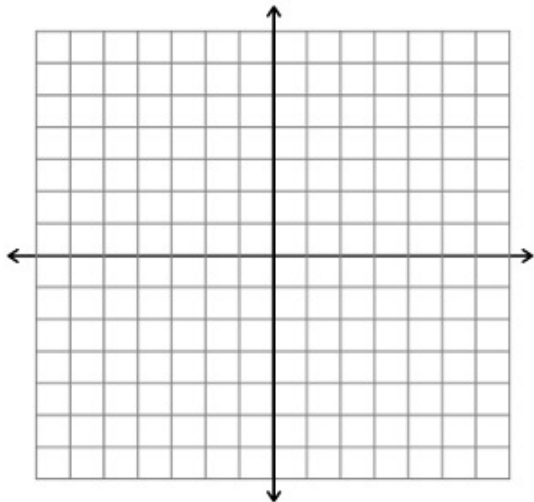4. $f(x) = \dfrac{-(x+5)(4-2x)(6+3x)(x+1)^2}{(5-x)(x-1)^2(x+2)^2}$
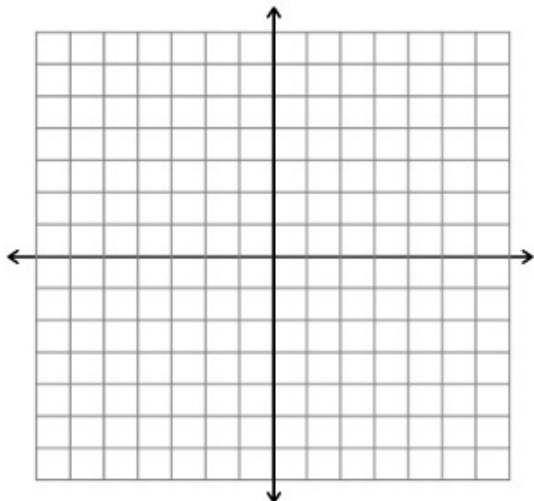
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5. $f(x) = \dfrac{-2(x+3)}{(x+3)(x-1)}$

6. $f(x) = \dfrac{-2(x+3)^2(x+1)}{(x+3)(x-1)}$

7. $f(x) = \dfrac{2(x-3)(x+1)}{(x+3)(x-1)}$

8. $f(x) = \dfrac{(x-3)(x-2)(x+1)(x-5)}{(x+3)(x-1)}$

What is the end behavior of $y = \dfrac{(ax-c)^3(x-b)}{(dx-e)^2(x-f)^2}$?