ALGEBRA 2 HONORS
PROBLEM SET 01

DUE DATE: JANUARY 11, 2024

Question 1. Compute the x-intercepts, the vertical asymptotes, and horizontal asymptote for each of the following rational functions:

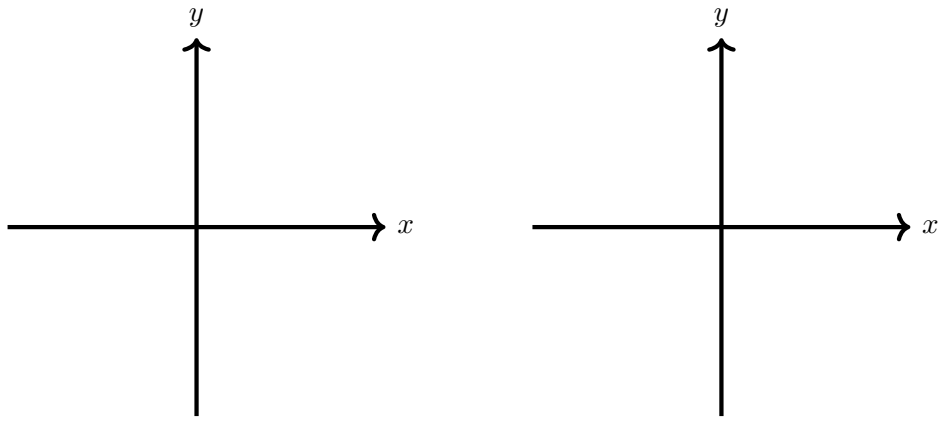
Function	**x-intercepts**	**Vertical Asymptotes**	**Horizontal Asymptotes**
$f(x) = \dfrac{2x-6}{(x+2)(x-1)}$			
$g(x) = \dfrac{(x+1)(x-23)}{x(x-2)}$			
$h(x) = \dfrac{(x+5)^2(x-3)}{(x-3)(x+3)}$			
$j(x) = \dfrac{x^2-2x+1}{x^2+9x-10}$			

Question 2. Let $f(x) = \dfrac{x^2}{x}$ and $g(x) = x$. Is $f(x) = g(x)$? Justify your answer in one sentence.

Question 3. Let $f(x) = \dfrac{x-3}{x+6}$ and $g(x) = \dfrac{2x^2-4x+2}{x^2+9x-10}$.

For $f(x)$ and $g(x)$, find

(1) Domain
(2) x-coordinate of any holes
(3) x-intercepts
(4) Vertical asymptotes
(5) Horizontal asymptotes
(6) Graph them using a sign chart!



Question 4. Draw the sign diagrams for each of the following graphs (use x-intercepts and vertical asymptotes).