# 40S Pre-Calculus
# Rational Functions Hand-in Assignment

**Name**_____

1. For the following rational functions, identify any asymptotes (vertical and horizontal), points of discontinuity (holes).

| Function | Non-permissible values | Vertical asymptote(s) | Horizontal asymptote | Coordinates of 'hole' |
|---|---|---|---|---|
| $y = \dfrac{x+4}{x-5}$ | | | | |
| $y = \dfrac{x^2 - 5x + 6}{x-2}$ | | | | |
| $y = \dfrac{x^2 - 7x + 12}{x^2 - 5x + 6}$ | | | | |
| $y = \dfrac{x^2}{x-4}$ | | | | |
| $y = \dfrac{2x^2 - 5}{x^2}$ | | | | |
| $y = \dfrac{x-3}{x^2 + 1}$ | | | | |

2. Match the graphs of the following rational functions to the equations shown. Record the letter of the equation on the grid of the graph of the function. There will be one graph left over.
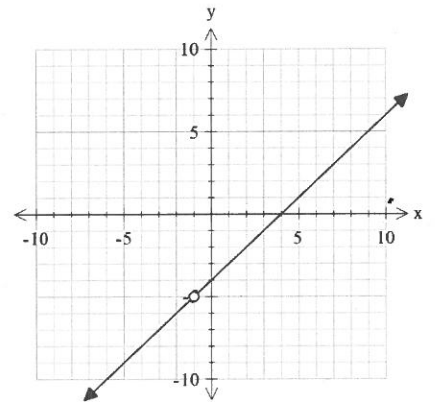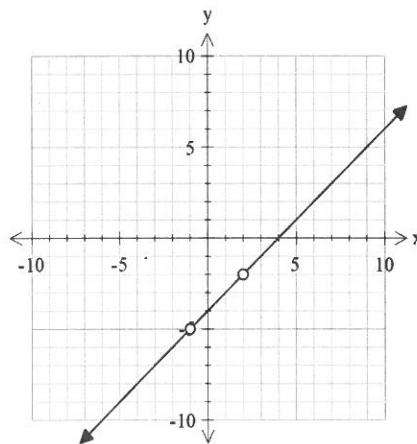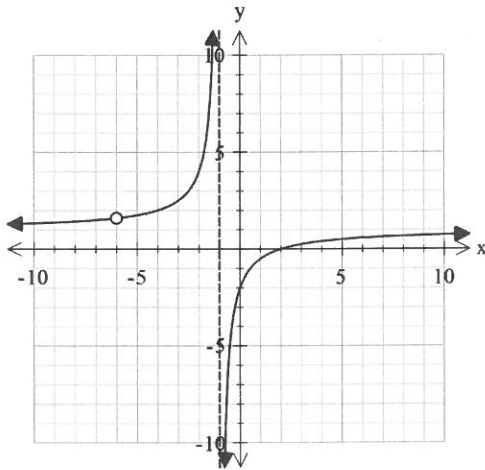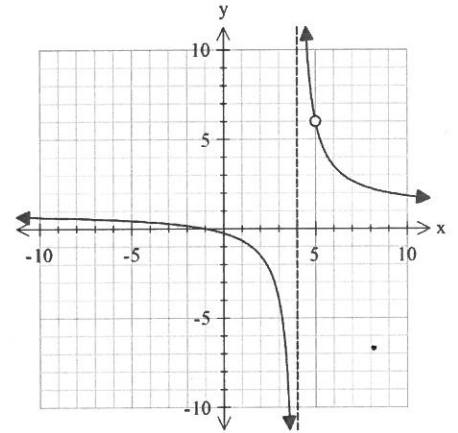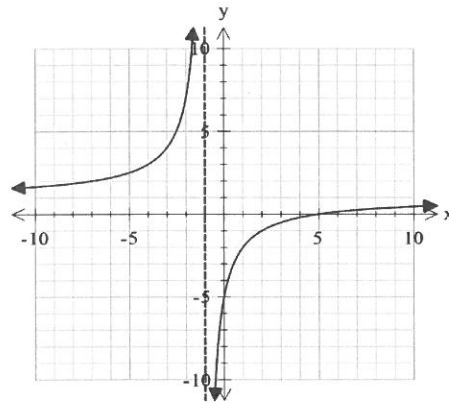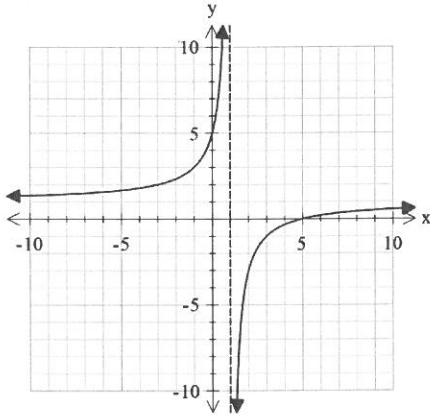
A) $y = \dfrac{x-5}{x+1}$

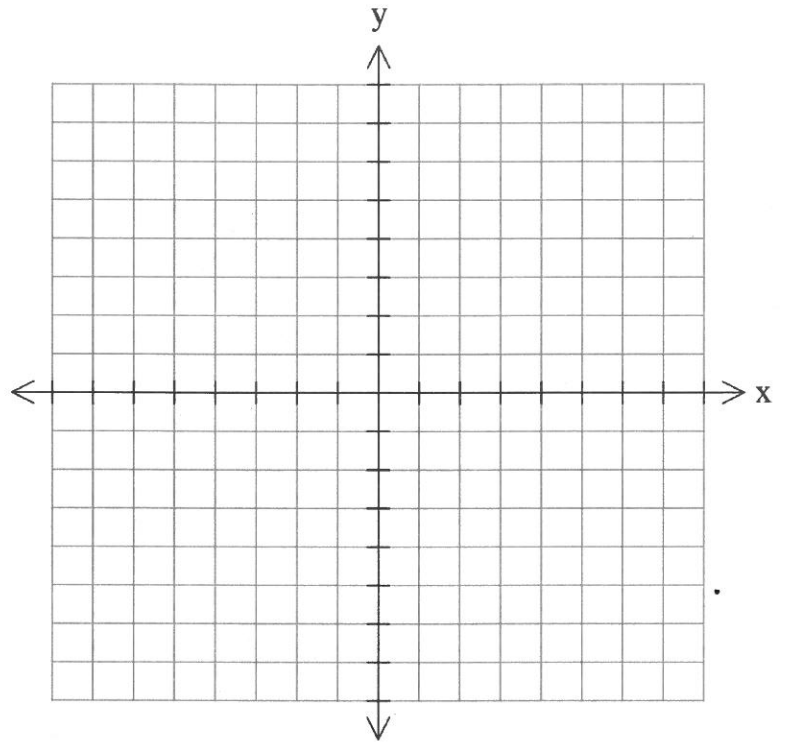B) $y = \dfrac{x-5}{x-1}$

C) $y = \dfrac{x^2+4x-12}{(x+6)(x+1)}$

D) $y = \dfrac{(x-2)(x+1)(x-4)}{(x+1)(x-2)}$
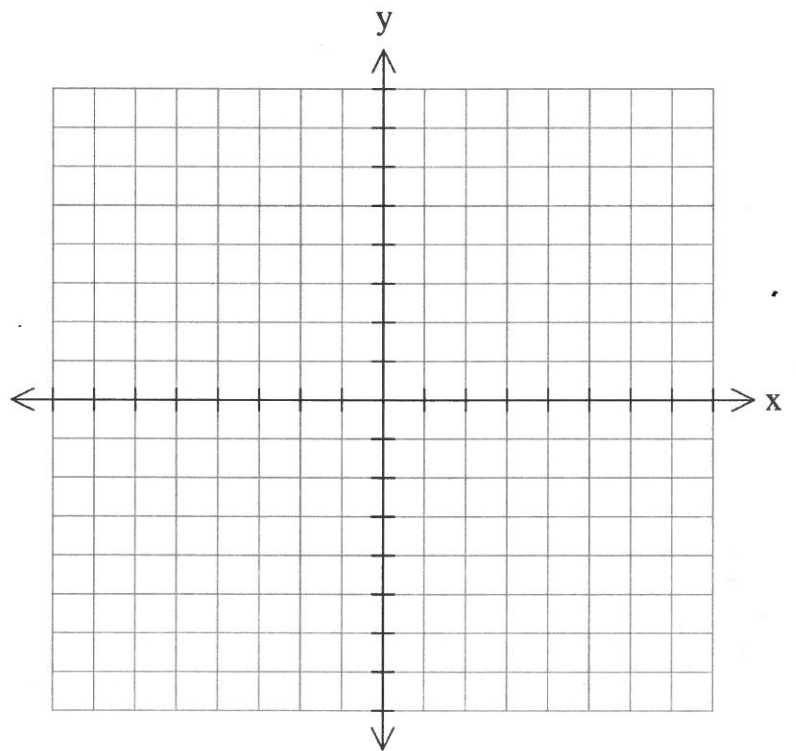
E) $y = \dfrac{x^2-4x-5}{x^2-9x+20}$

3. Graph the following rational functions. Label on each graph the equations of any asymptotes, any intercepts, and the coordinates of any holes.
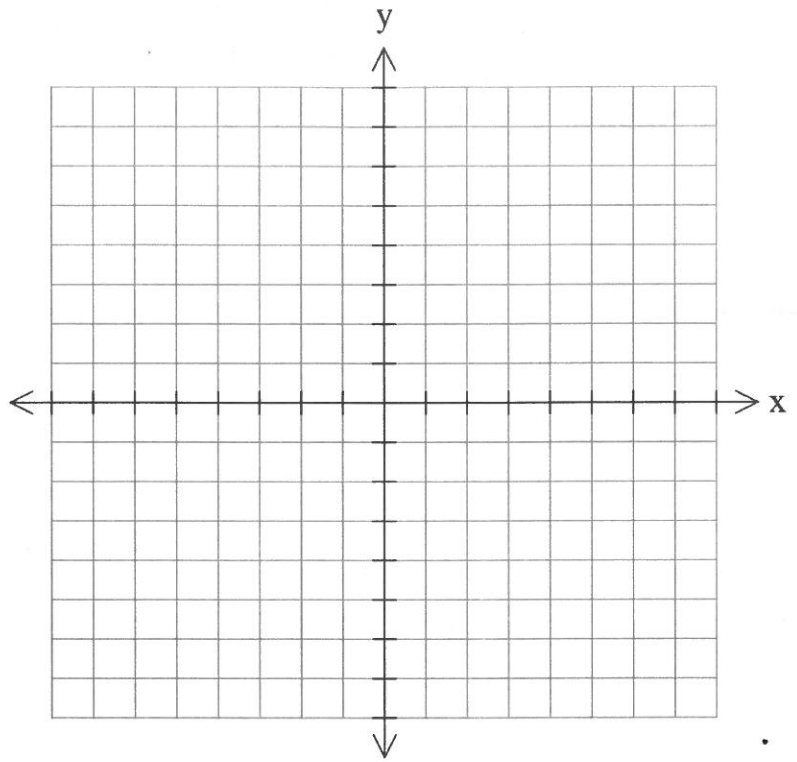
a) $y = \dfrac{(x+2)(x-1)}{x-1}$

b) $y = \dfrac{12x^2}{4x^2-16}$

c) $y = \dfrac{x^2-x-6}{x^2-2x-3}$

d) $y = \dfrac{x-1}{x^2-x}$