

# 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). (12 marks)

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

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. (1 mark each)

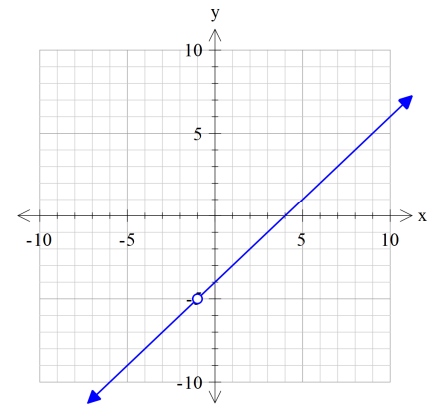
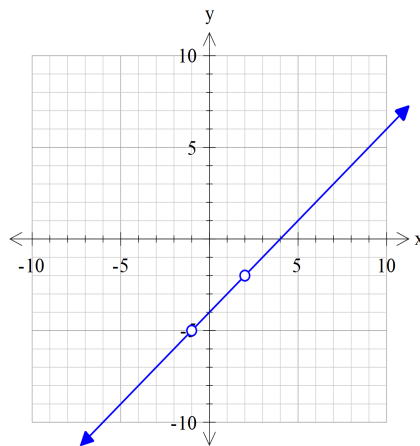
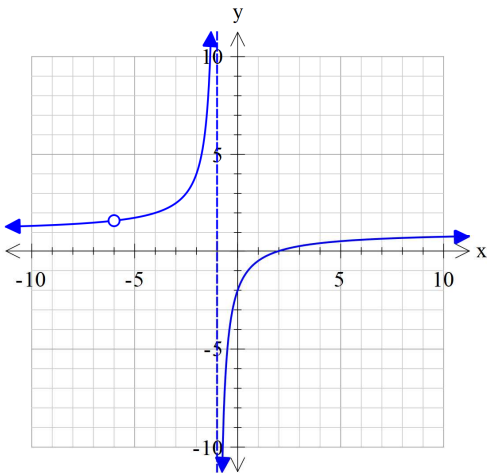
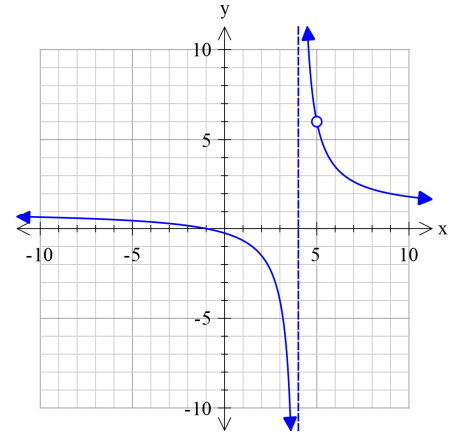
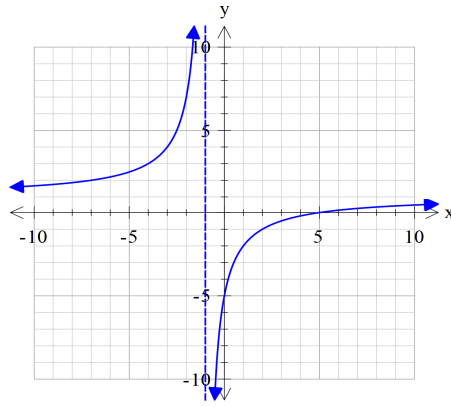
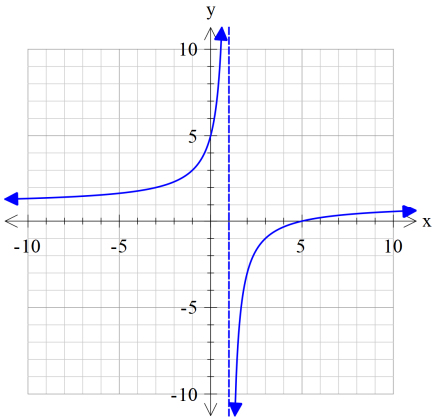
A)  $y = \frac{x-5}{x+1}$

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

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

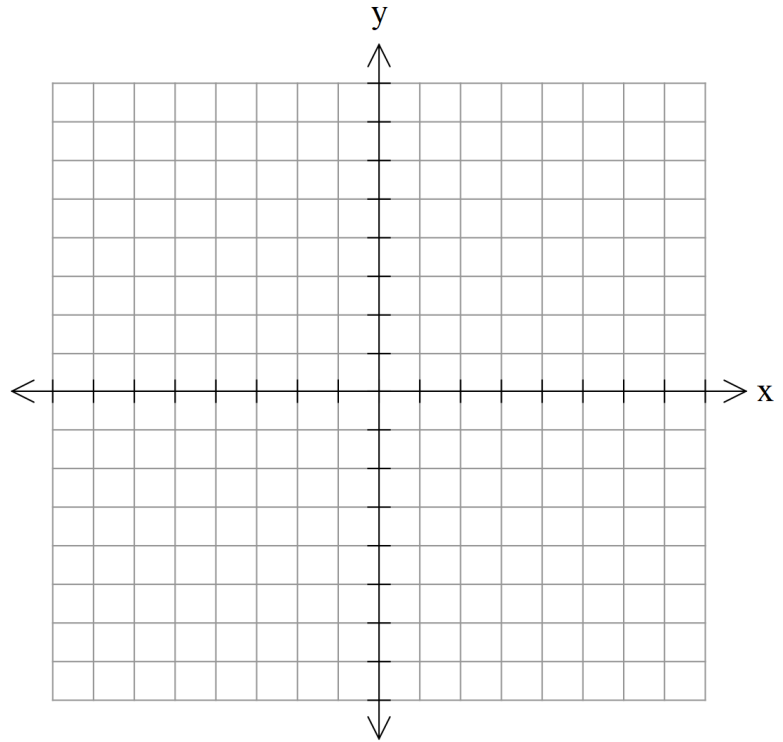
D)  $y = \frac{(x-2)(x+1)(x-4)}{(x+1)(x-2)}$

E)  $y = \frac{x^2-4x-5}{x^2-9x+20}$

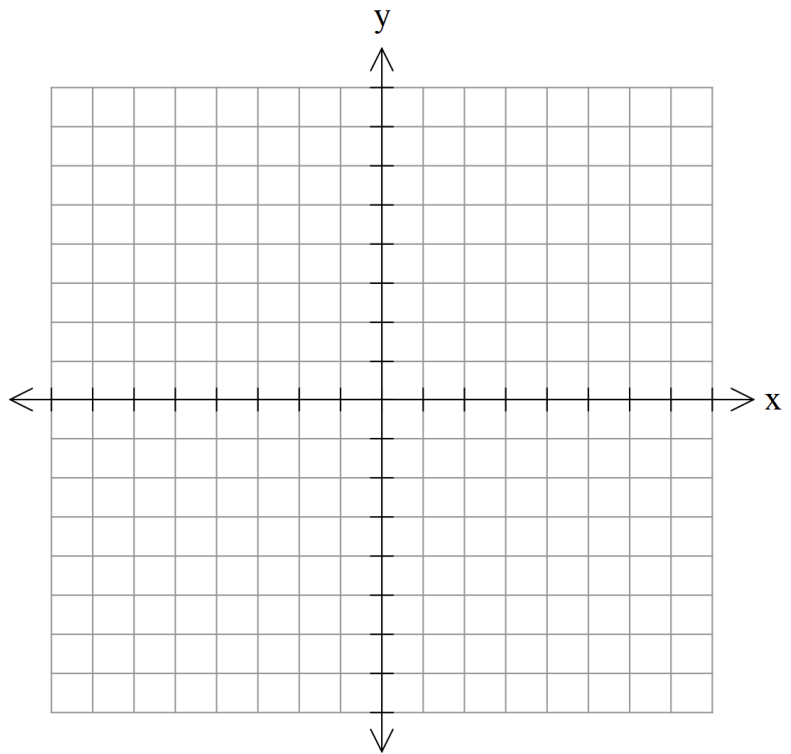


3. Graph the following rational functions. Label on each graph the equations of any asymptotes, any intercepts, and the coordinates of any holes. (4 marks each)

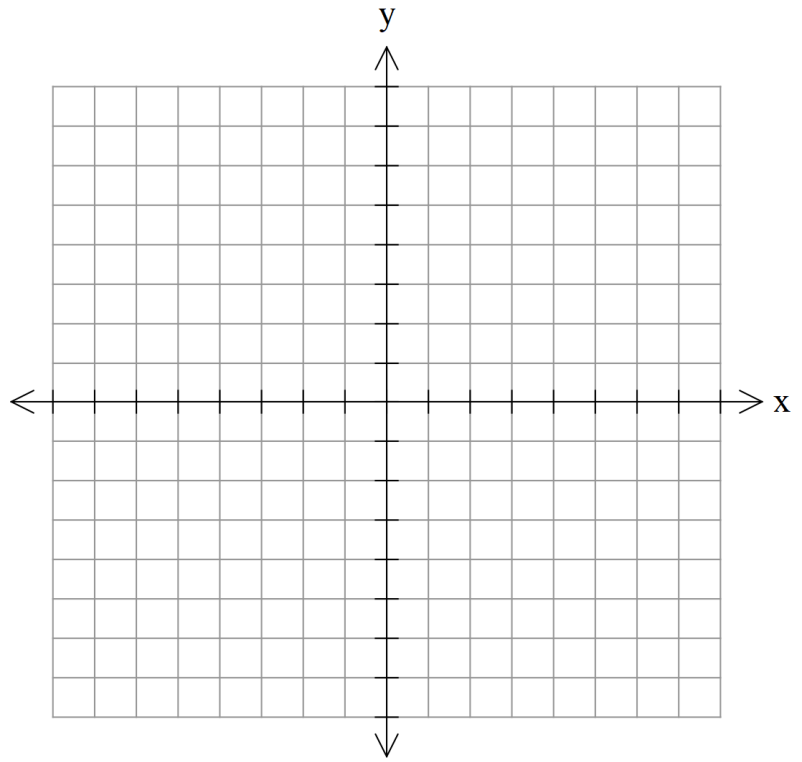
a)  $y = \frac{(x+2)(x-1)}{x-1}$



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



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



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

