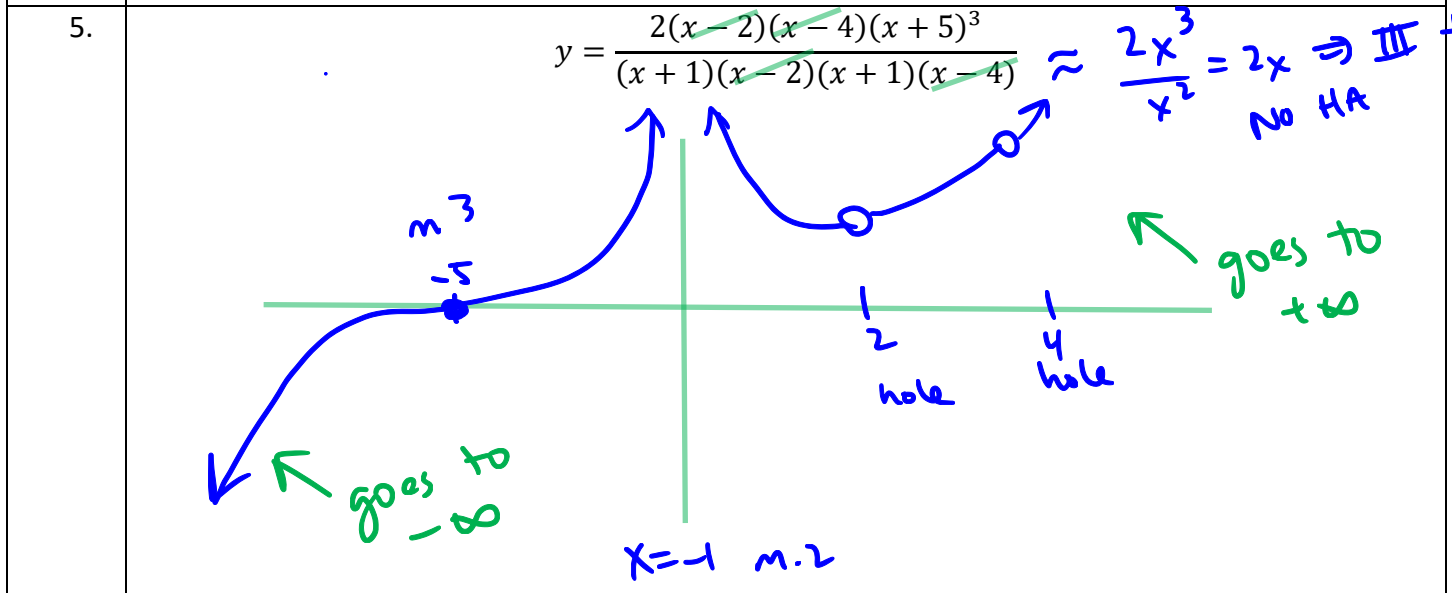
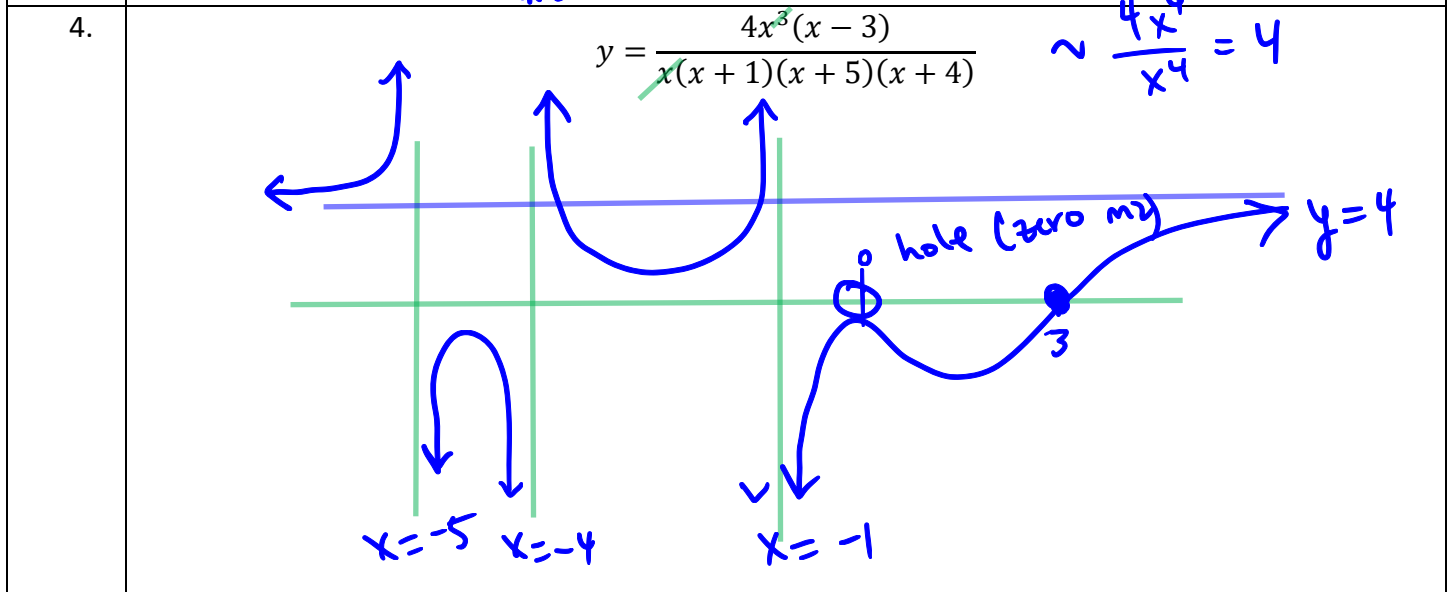
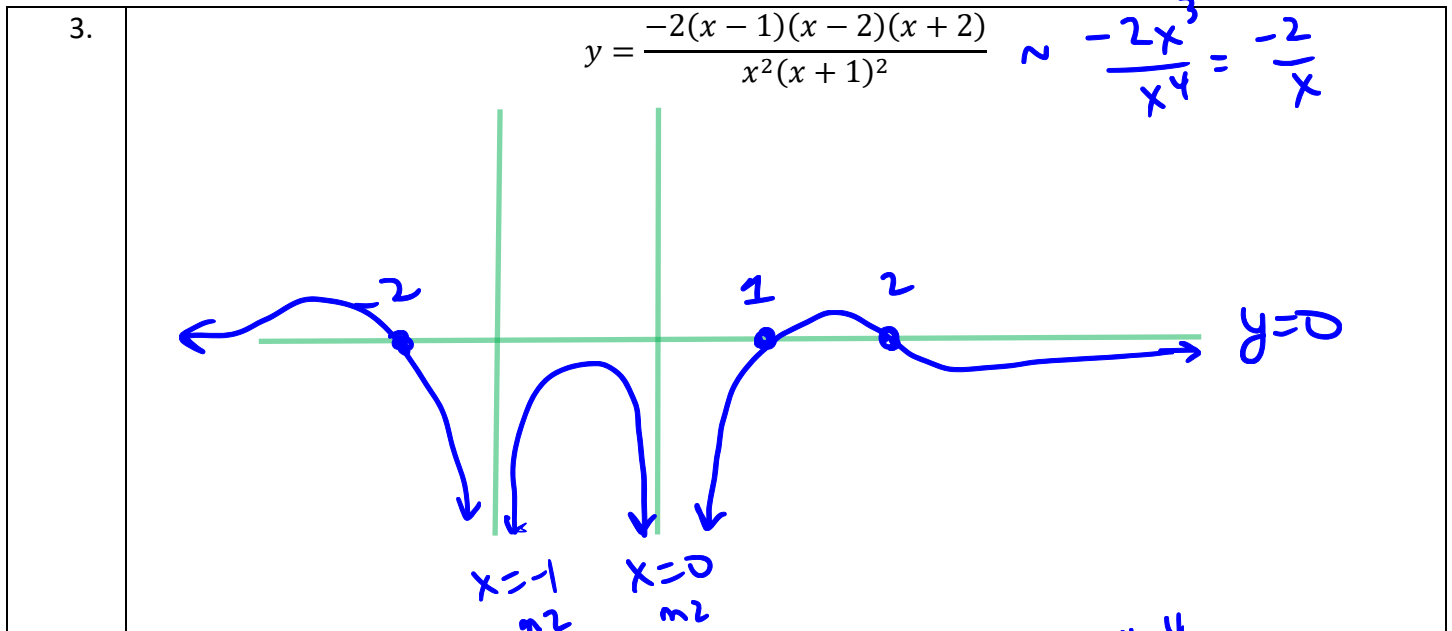


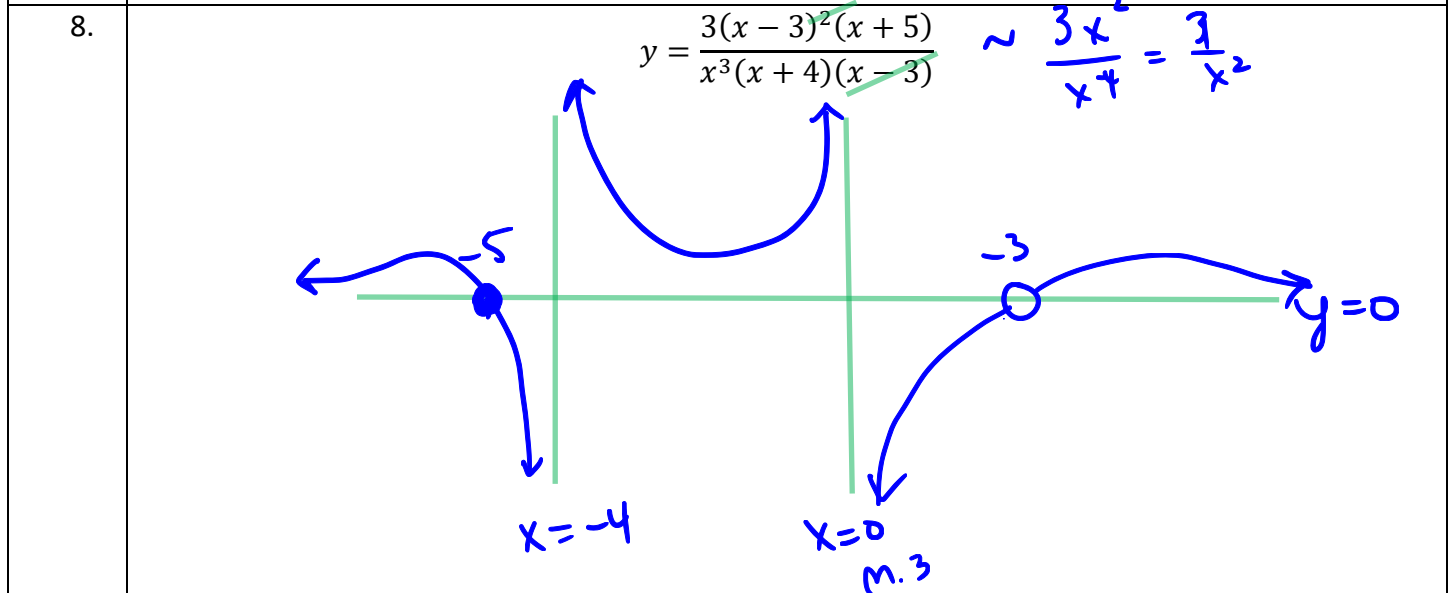
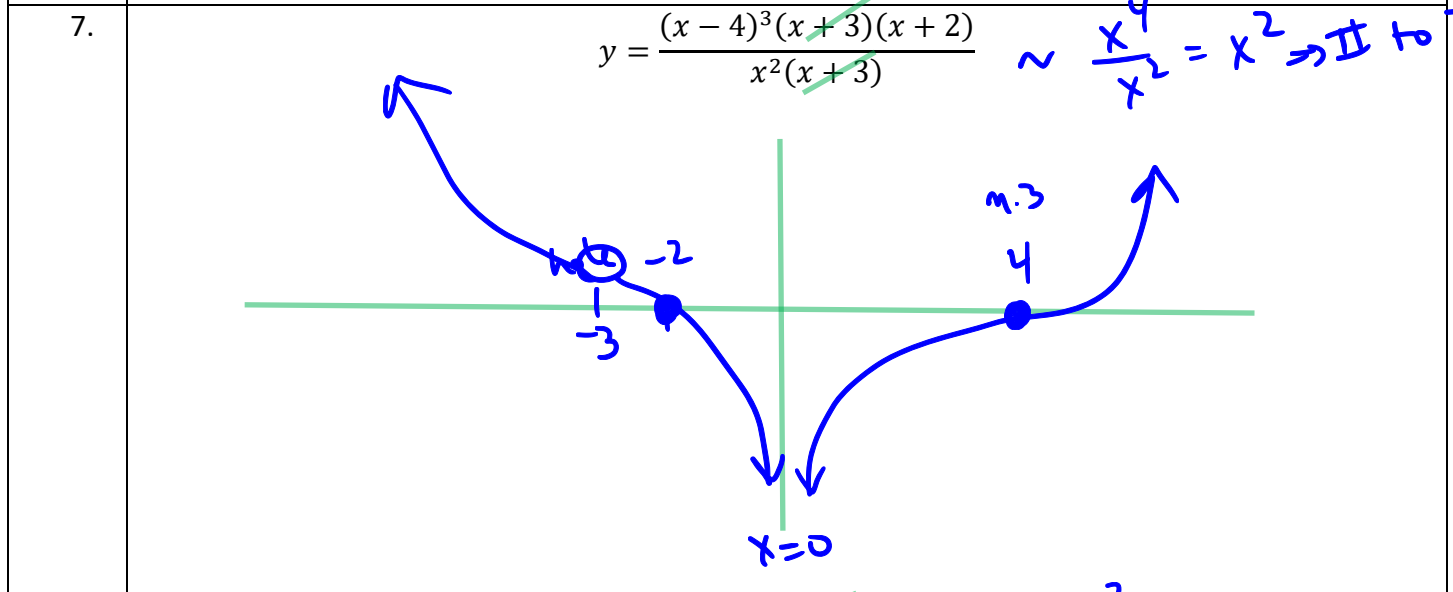
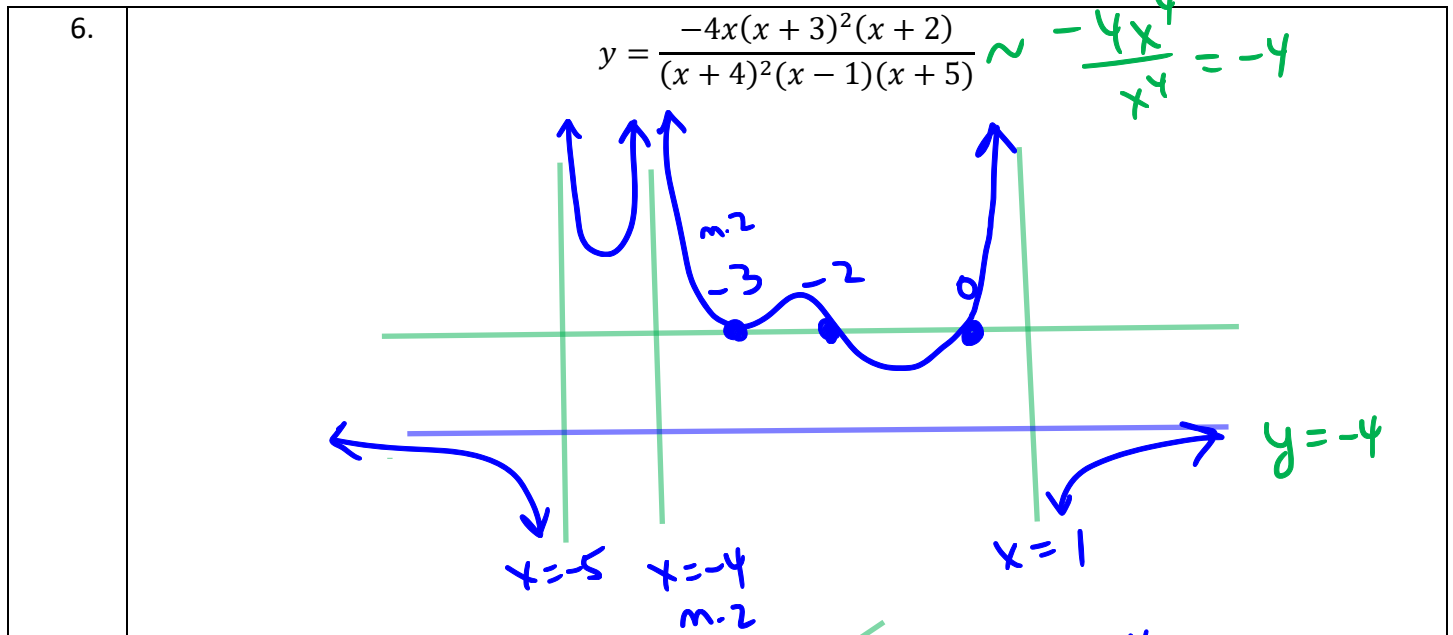
# Rational Functions: Graphing Practice

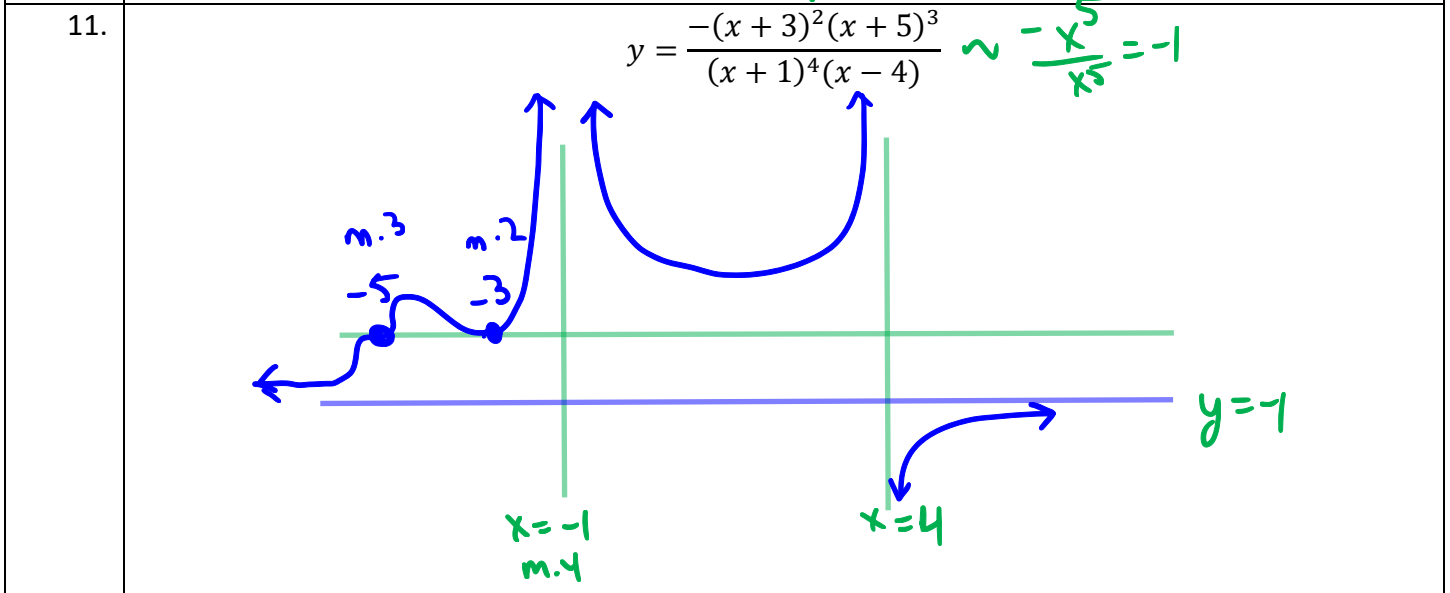
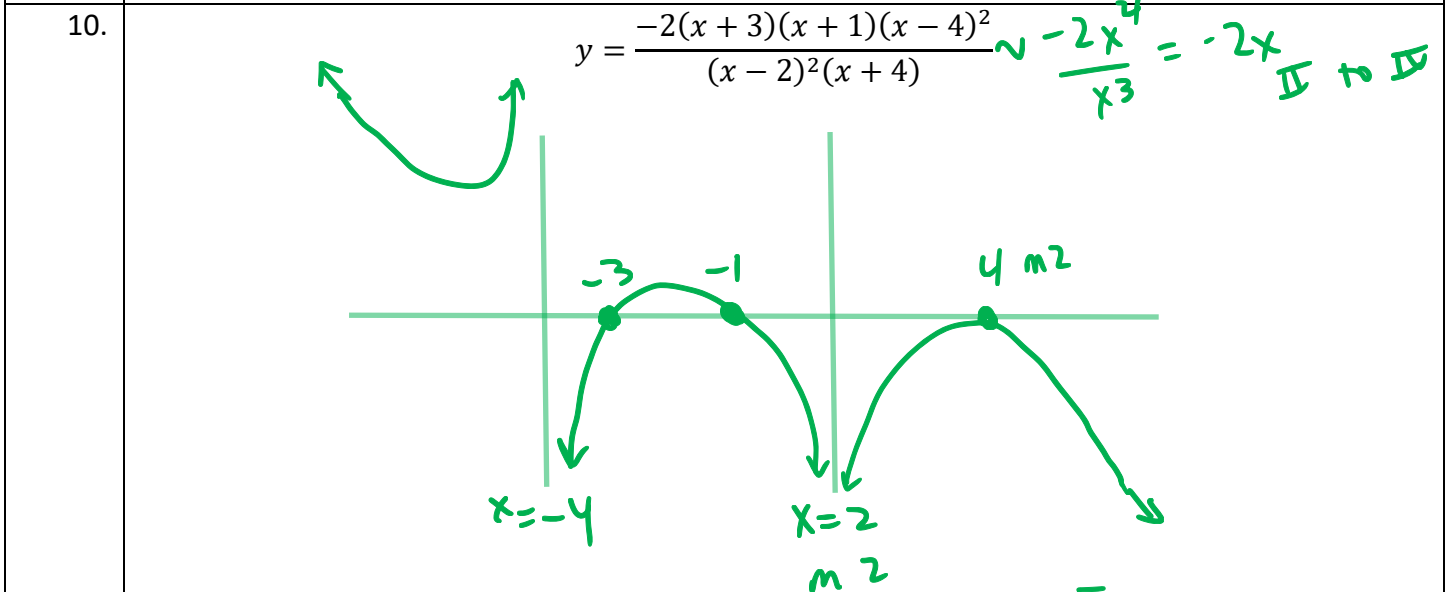
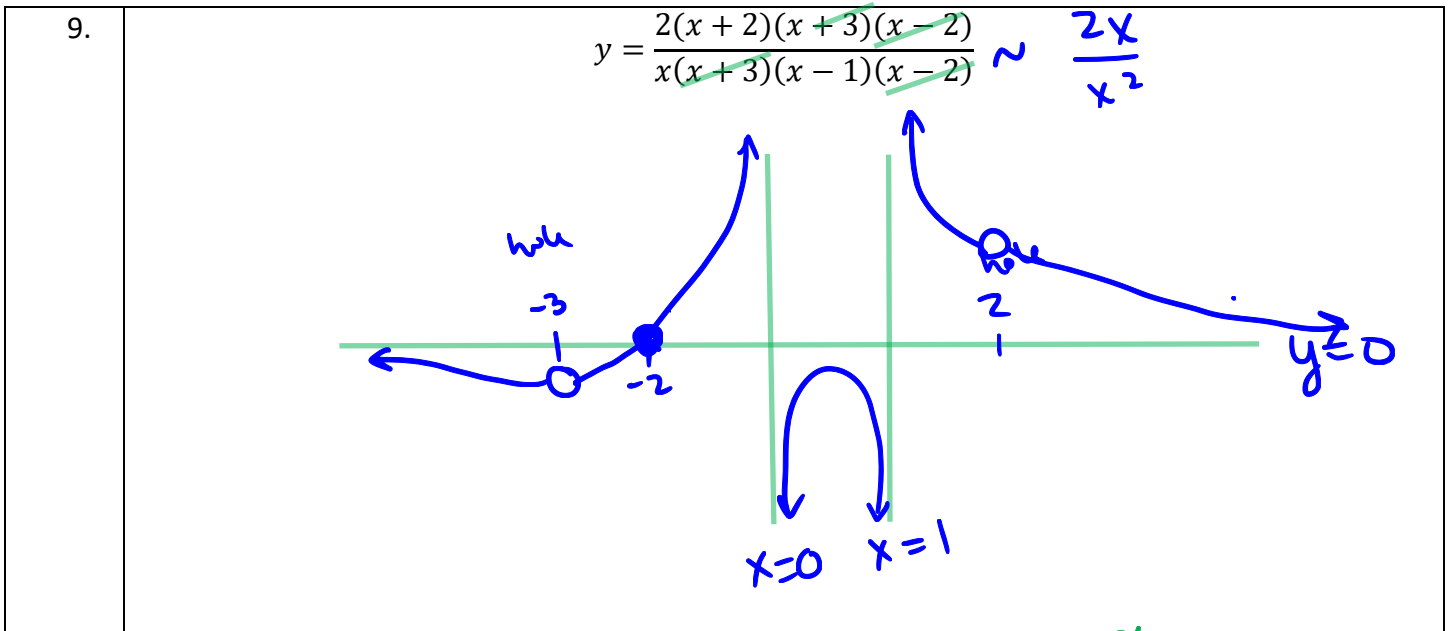
**Goal:** Practice with the graphs of rational functions. Understand their horizontal asymptotes.

Graph the following rational functions. Make sure you are clear about multiplicity and classification (zero, hole, asymptote)

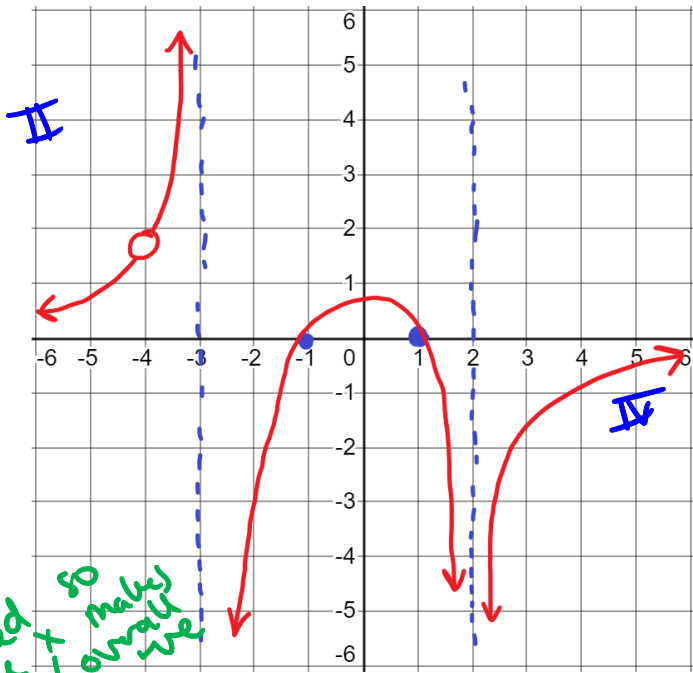
<p>1.</p>	$y = \frac{(x+2)(x-4)(x-1)}{(x-4)(x+5)(x-6)}$ <p style="text-align: right;"><math>\sim \frac{x^3}{x^3} = 1</math></p>
<p>2.</p>	$y = \frac{-2(x+5)(x+4)(x-4)}{(x-1)(x-4)(x+5)}$ <p style="text-align: right;"><math>\sim -2 \frac{x^3}{x^3} = -2</math></p>







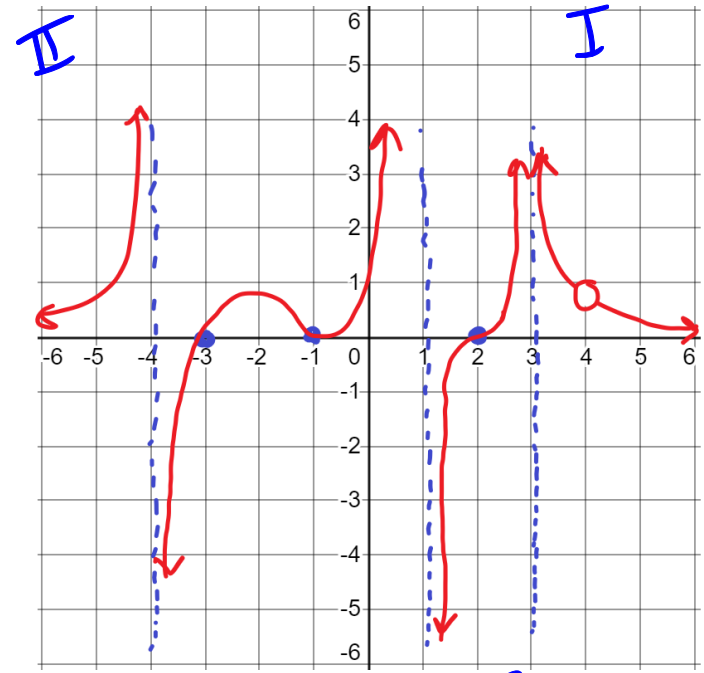
Identify the characteristics of the following graphs and build an equation that would have those characteristics.



need  $\frac{1}{x^2}$  + so make  $\frac{1}{x^2}$  overall we

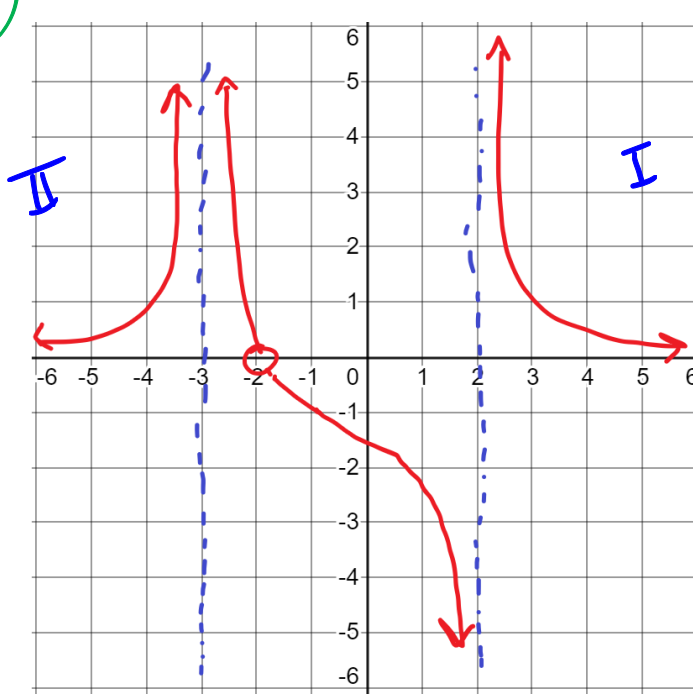
$$-\frac{(x+4)(x+1)(x-1)}{(x+3)(x-2)^2(x+4)}$$

$\frac{1}{x^2}$

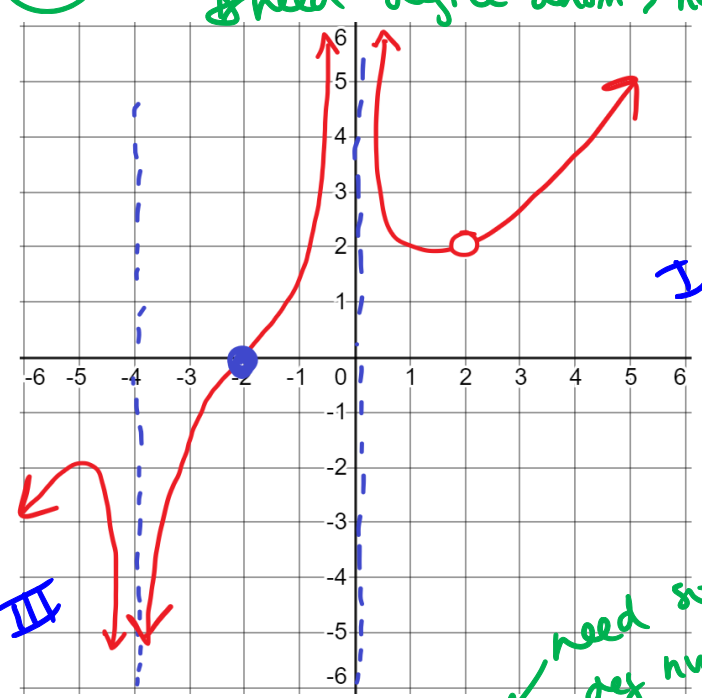


✓ 
$$\frac{(x-4)(x+3)(x+1)^2(x-2)}{(x+4)^3(x-1)(x-3)^2(x-4)}$$
  
 & need degree denom > num.

$\frac{1}{x^2}$

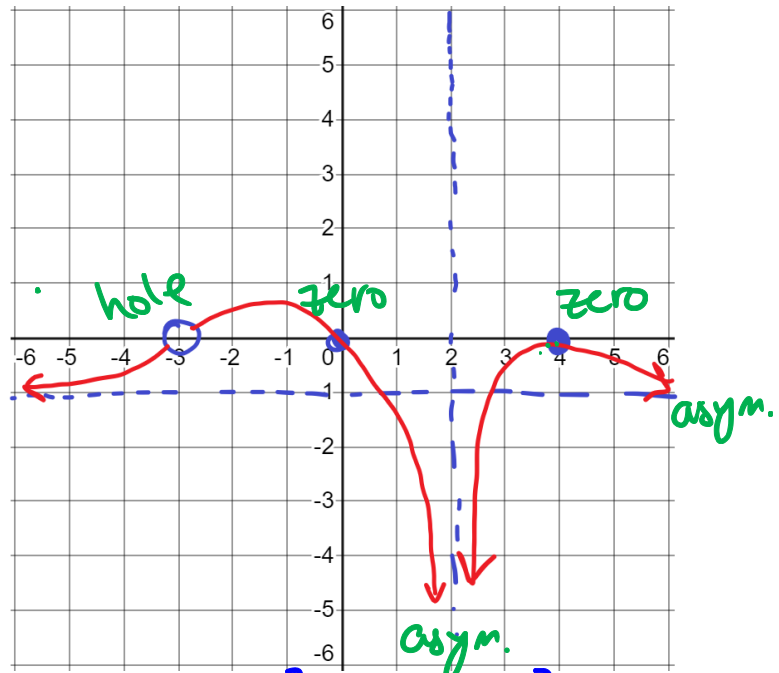
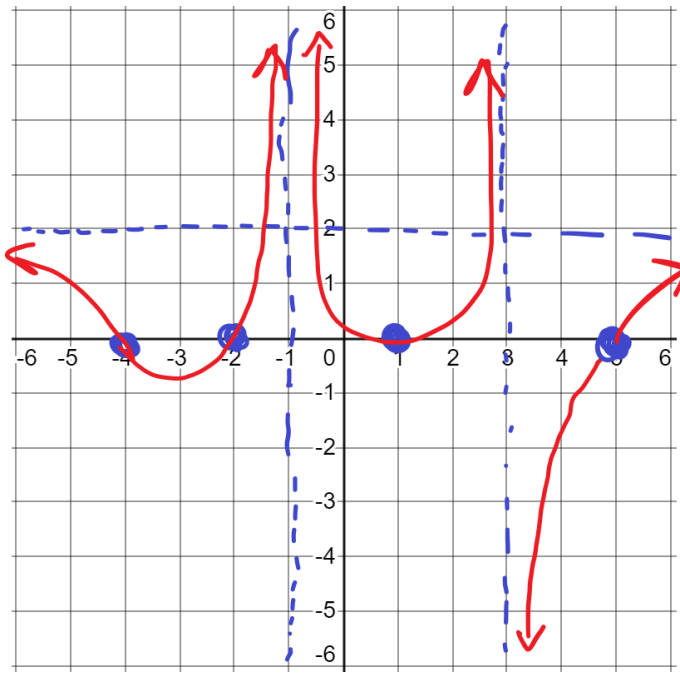


$\frac{1}{x^2}$  ✓ 
$$\frac{(x+2)^2}{(x+3)^2(x-2)(x+2)}$$



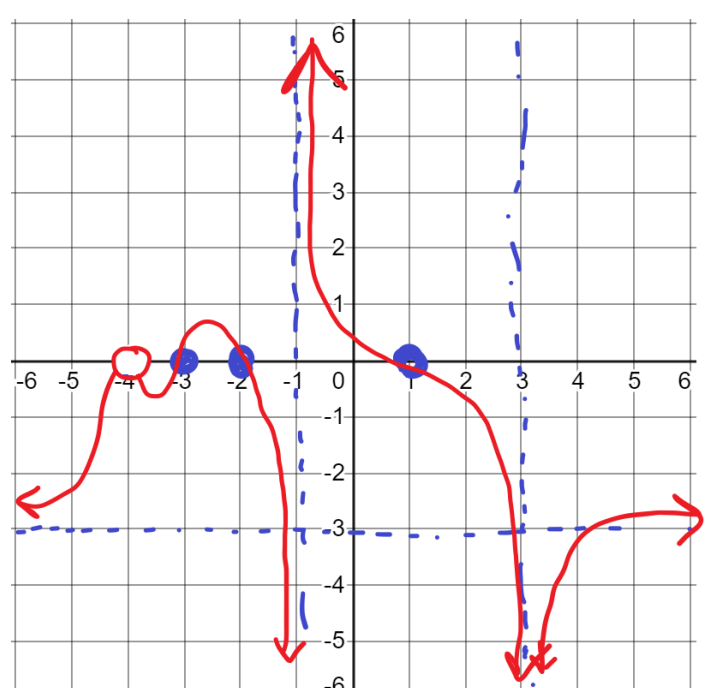
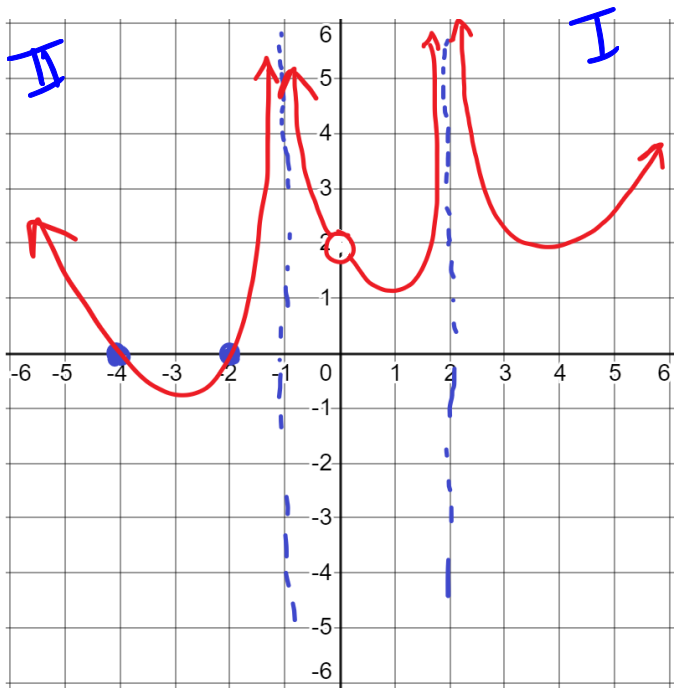
$\frac{1}{x^5}$  ✓ 
$$\frac{(x-2)(x+2)^5}{x^2(x+4)^2(x-2)}$$
  
 need so deg num > deg denom.

$\frac{1}{x^5}$



$\frac{2(x+4)(x+2)(x-1)^2(x-5)}{(x+1)^2(x-3)^3}$

$-\frac{(x+3)^2 x (x-4)^2}{(x-2) \cdot 4 (x+3)^1}$   $\frac{-x^5}{x^5} = -1$



$\frac{x(x+4)(x+2)^3}{(x+1)^2(x-2)^2 x}$

$\frac{-3x^6}{x^6} = -3$

$-\frac{3(x+4)^3(x+3)(x+2)(x-1)}{(x+1)^3(x-3)^2(x+4)}$