*2.3 & 9.1 *

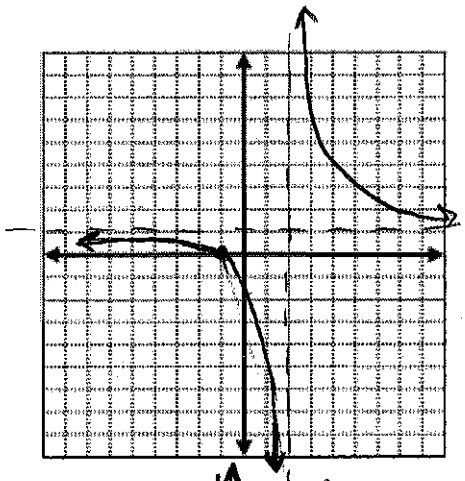
Name: _____ Date: _____ HW: _____

Rational Functions Review

1. The function has a zero at –1, a horizontal asymptote at y = 1 and a vertical asymptote at x = 2.

numerator info coefficients degrees = denominator info

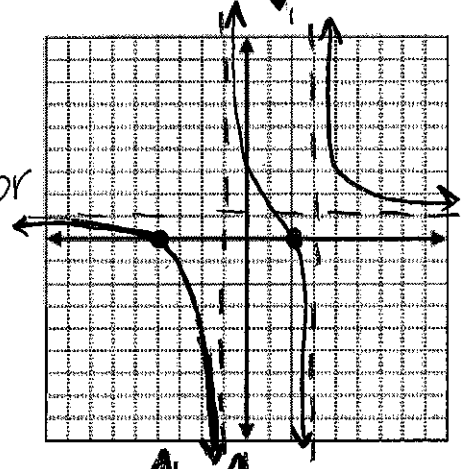
Possible rule: $y = \frac{1(x+1)}{1(x-2)}$



2. The function has two zeros at 2 and –4, a horizontal asymptote at y = 1 and vertical asymptotes at x = –1 and x = 3.

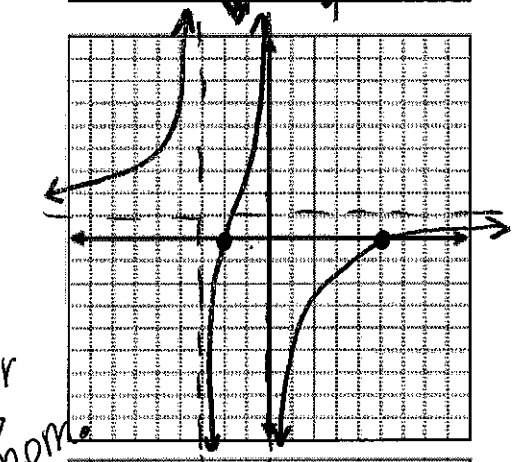
numerator coefficients degrees = denominator

Possible rule: $y = \frac{(x-2)(x+4)}{(x+1)(x-3)}$



3. The function has two zeros at 5 and –2 , a horizontal asymptote at y = 1 and vertical asymptotes at x = –3 and x = 0.

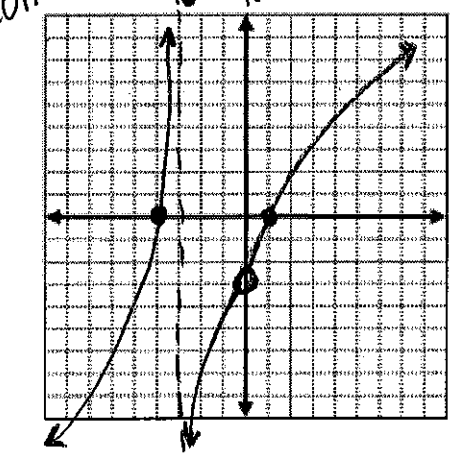
Possible rule: $y = \frac{(x-5)(x+2)}{x(x+3)}$



4. The function has two zeros at 1 and –4, no horizontal asymptote and a vertical asymptote at x = –3 and a hole at x = 0.

numerator numerator degree > denom. denominator n&d

Possible rule: $y = \frac{x(x-1)(x+4)}{x(x+3)}$



$x = -10 \quad \frac{-(-)(-)}{-(-)} = \frac{-}{+} = -$

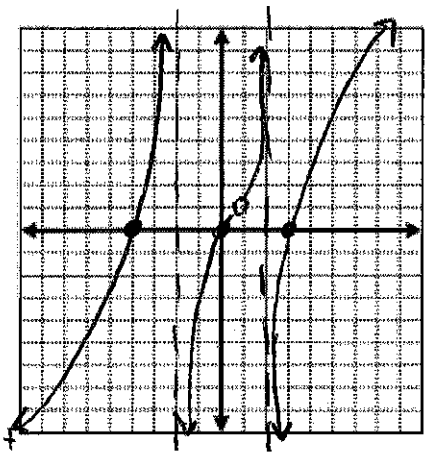
$x = 10 \quad \frac{(+)(+)(+)}{(+)(+)} = \frac{+}{+} = +$

Name: _____ Date: _____ HW: _____

Rational Functions Review

$n > d$

5. The function has three zeros at 0, 3 and –4 , no horizontal asymptote and vertical asymptotes at x = –2 and x = 2 and a hole at x = 1.



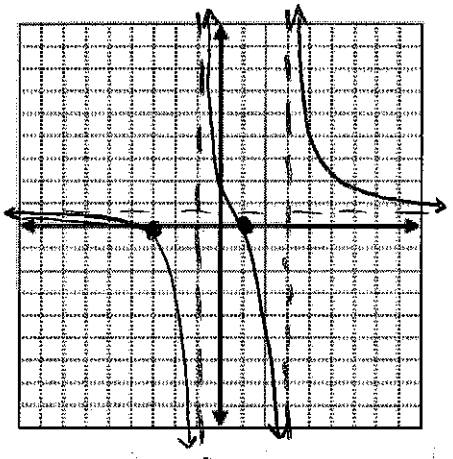
Possible rule: $y = \dfrac{x(x-3)(x+4)(x-1)}{(x+2)(x-2)(x-1)}$

$x = -10 \quad \dfrac{(-)(-)(-)(-)}{(-)(-)(-)} = -$ $\qquad x = -1 \quad \dfrac{(-)(-)(+)(-)}{(+)(-)(-)}$ $\qquad x = 10$

$+ \; +++$

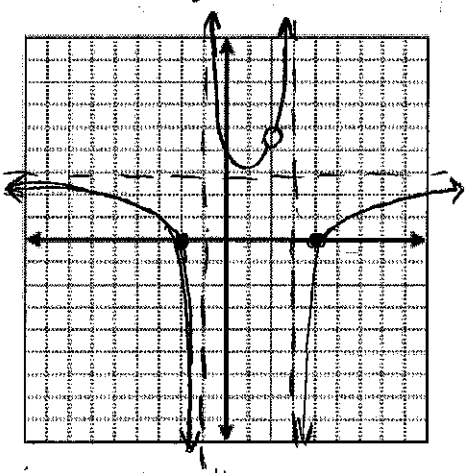
$- \; +++$

6. The function has two zeros at 1 and –3 , a horizontal asymptote at y = ½ and vertical asymptotes at x = –1 and x = 3.



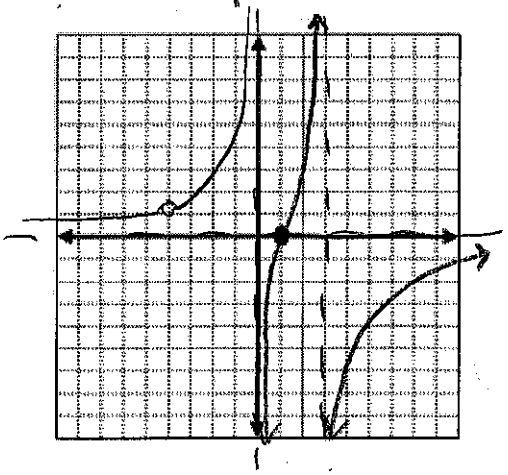
Possible rule: $y = \dfrac{1(x-1)(x+3)}{2(x+1)(x-3)}$

7. The function has two zeros at 4 and –2 , a horizontal asymptote at y = 3 and vertical asymptotes at x = –1 and x = 3 and a hole at 2.



Possible rule: $y = \dfrac{3(x-4)(x+2)(x-2)}{1(x+1)(x-3)(x-2)}$

8. The function has one zero at 1, a horizontal asymptote at y = 0 and vertical asymptotes at x = –1 and x = 3 and a hole at x = –4. The branches are in quadrants II and IV.



Possible rule: $y = \dfrac{(x-1)(x+4)}{x+1(x-3)(x+4)}$