Name_____ Date_____ Period_____

GRAPHING RATIONAL FUNCTIONS WORKSHEET #2

1. The graph of a rational function has a(n) _____ _____ at $y = 0$ if the degree of the numerator is _____ _____ the degree of the denominator.

2. The horizontal asymptote of a rational function is the ratio of leading coefficients when the degree of the numerator is _____ _____ the degree of the denominator.

3. If the degree of the numerator is _____ _____ than the degree of the denominator, the rational function has a(n) _____ _____.

4. You must use synthetic or long _____ to find the equation of an oblique asymptote.

5. When you cancel a common factor out of the numerator and denominator of a rational function, it forms a _____ in the graph at that point. To find the coordinates of that point, set the canceled factor equal to _____ and solve for x. Then _____ to find y.

6. Match the work shown for each process.

_____a) Finding an oblique asymptote _____ b) Finding a zero

_____c) Finding a vertical asymptote _____ d) Finding a hole

I

$f(x) = \dfrac{x^2-8x+7}{x-1}$

$\dfrac{(x-1)(x-7)}{x-1} = x-7$

$x-1=0$ $x=1$ $y=1-7=-6$

II

$g(x) = \dfrac{x^2-15x+56}{x-3}$

$g(x) = \dfrac{(x-7)(x-8)}{x-3}$

$x-7=0$ $x=7$ $x-8=0$ $x=8$

III

$h(x) = \dfrac{x^2+2x-15}{2x^2-7x+3}$

$\dfrac{(x+5)(x-3)}{(2x-1)(x-3)}$

$2x-1=0$

$x=1/2$

IV

$j(x) = \dfrac{2x^2-5x+5}{x-2}$

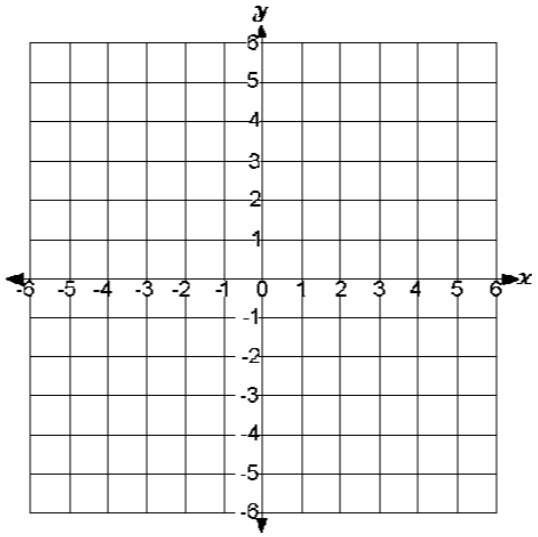
$2 \mid 2 \ -5 \ 5$

$\quad\quad 4 \ -2$

$2 \ -1 \ 3:R$

$y=2x-1$

7. $f(x)=\dfrac{x^2-25}{x^2-4x-5}=\dfrac{(x+5)(x-5)}{(x-5)(x+1)}=\dfrac{x+5}{x+1}$



Coordinates of hole:

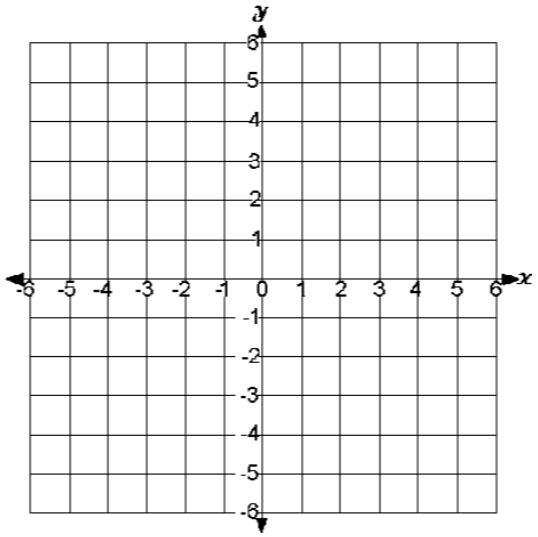
Equation of vertical asymptote:

Zero(s): y-intercept:

Equation of horizontal OR oblique asymptote:

Domain: Range:

8. $f(x)=\dfrac{x^2+x-6}{x^2-4}$



Coordinates of hole:

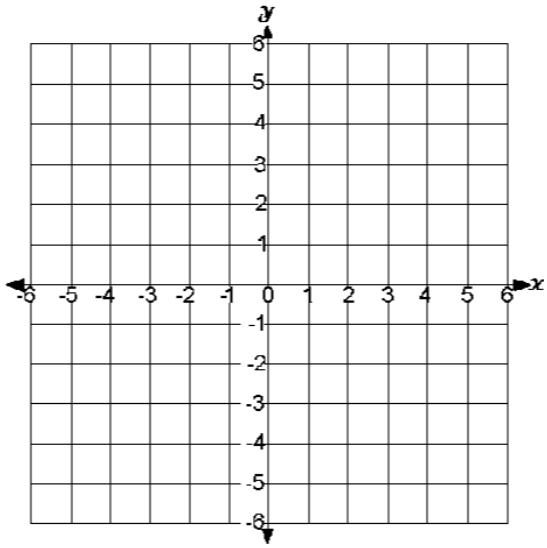
Equation of vertical asymptote:

Zero(s): y-intercept:

Equation of horizontal OR oblique asymptote:

Domain: Range:

9. $f(x)=\dfrac{x^2+2x-3}{x-1}$



Coordinates of hole:

Equation of vertical asymptote:

Zero(s): y-intercept:

Equation of horizontal OR oblique asymptote:

Domain: Range:

10. $g(x) = \dfrac{x-3}{x^2+x-12}$

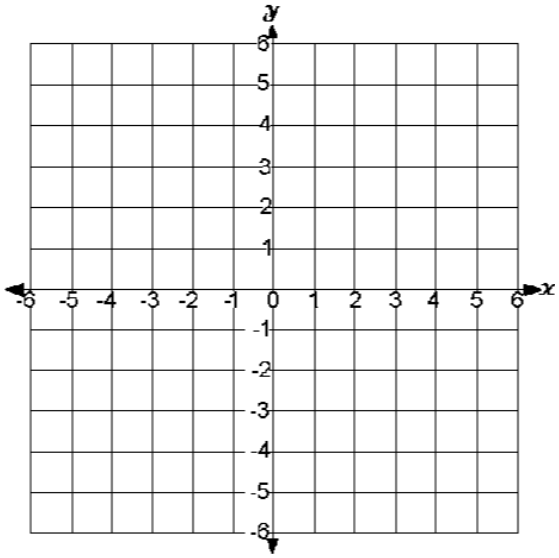
Coordinates of hole:

Equation of vertical asymptote:

Zero(s): y-intercept:

Equation of horizontal OR oblique asymptote:

Domain: Range:



11. $h(x) = \dfrac{x^2+2x-15}{x+3}$

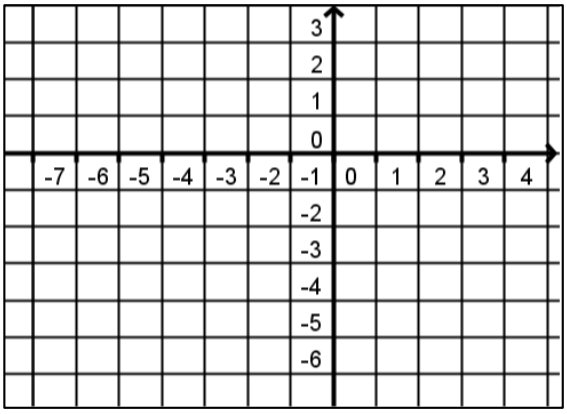
Coordinates of hole:

Equation of vertical asymptote:

Zero(s): y-intercept:

Equation of horizontal OR oblique asymptote:

Domain: Range:



12. $f(x) = \dfrac{(x+1)(x^2+2x+1)}{x^2-1}$

Hint: The point (3, 8) is on the graph and it is a rel. minimum.

Coordinates of hole:

Equation of vertical asymptote:

Zero(s): y-intercept:

Equation of horizontal OR oblique asymptote:

Domain: Range: