Holes: An open ______________ on the graph, (x,y). This is where there is a ______________ in the graph and occurs when there is a _________________________ between the numerator and denominator. The X-coordinate is found by setting the common factor equal to zero. The Y-coordinate is found by substituting the x-coordinate into the simplified equation.

Ex: $f(x)=\dfrac{x^2-4x+3}{x^2-x-6}$

Slant Asymptotes: If the degree on the ______________ is _________________________ higher than the degree on the ________________________, then the function has a slant asymptote, __________________.

- Use ______________ to find the equation.

Ex: $f(x)=\dfrac{x^2+x-6}{x+2}$

1.) $f(x)=\dfrac{x^2-6x+8}{x^2-16}$

x-intercept(s): __________________________

y-intercepts: ________________________

VA: ________________________________

HA: ________________________________

SA: ________________________________

hole: ________________________________

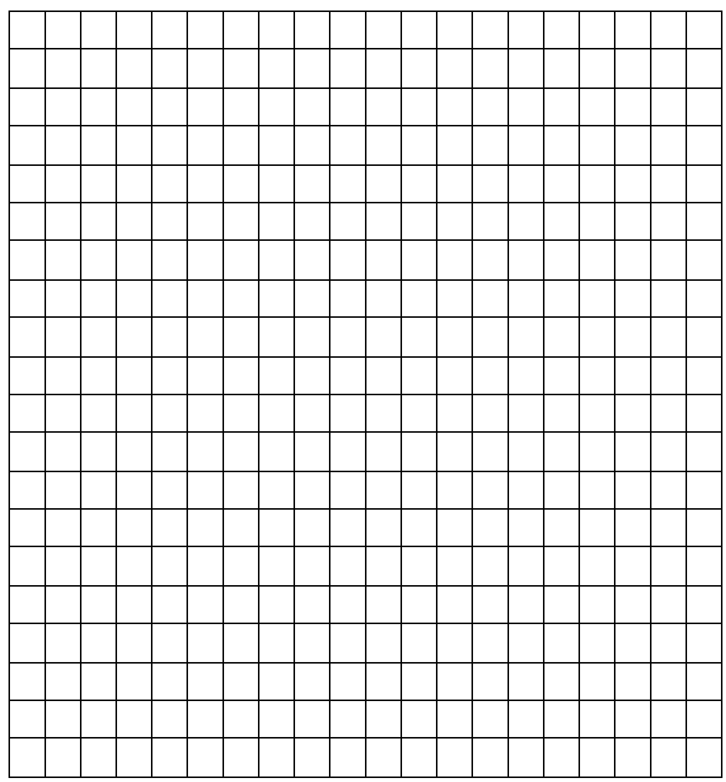
domain: _____________________________

range: _____________________________

End Behavior:

$as\ x\to\infty,\ f(x)\to$: __________________

$as\ x\to-\infty,\ f(x)\to$: ________________



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

x-intercept(s): ___________________________

y-intercept: _________________________

VA: _________________________________

HA: _________________________________

SA: _________________________________

hole: _________________________________

domain: ______________________________

range: ______________________________

End Behavior:

$as\ x \to \infty, f(x) \to$: __________________

$as\ x \to -\infty, f(x) \to$: _________________

3.) f(x) = $\dfrac{x^2 - 4x + 3}{x^2 - x - 6}$

x-intercept(s): ___________________________

y-intercept: _____________________________

VA: _________________________________

HA: _________________________________

SA: _________________________________

hole: _________________________________

domain: ______________________________

range : ______________________________

End Behavior:

$as\ x \to \infty, f(x) \to$: ____________________

$as\ x \to -\infty, f(x) \to$: __________________

Graphing Rational Functions with Slants and Holes HW

1.) f(x) = $\dfrac{x^2+4x}{x^2+3x-4}$,

x-intercept(s): ______________________

y-intercept: ______________________

VA: ______________________

HA: ______________________

SA: ______________________

hole: ______________________

domain: ______________________

range: ______________________

End Behavior:

$as\, x \to \infty,\ f(x) \to$: ______________

$as\ x \to -\infty,\ f(x) \to$: ______________

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

x-intercept(s): ______________________

y-intercept: ______________________

VA: ______________________

HA: ______________________

SA: ______________________

hole: ______________________

domain: ______________________

range: ______________________

End Behavior:

$as\, x \to \infty,\ f(x) \to$: ______________

$as\ x \to -\infty,\ f(x) \to$: ______________

3.) f(x) = $\dfrac{x^2+10x+21}{x+3}$

x-intercept(s): ______________________________

y-intercept: ________________________________

VA: ____________________________________

HA: ____________________________________

SA: ____________________________________

hole: __________________________________

domain: _________________________________

range: __________________________________

End Behavior:

$as\,x \to \infty,\ f(x) \to$: ______________________

$as\ x \to -\infty,\ f(x) \to$: ____________________

4.) f(x) = $\dfrac{x^2+2x-15}{x+2}$

x-intercept(s): ______________________________

y-intercept: ________________________________

VA: ____________________________________

HA: ____________________________________

SA: ____________________________________

hole: __________________________________

domain: _________________________________

range: __________________________________

End Behavior:

$as\,x \to \infty,\ f(x) \to$: __________________

$as\ x \to -\infty,\ f(x) \to$: __________________