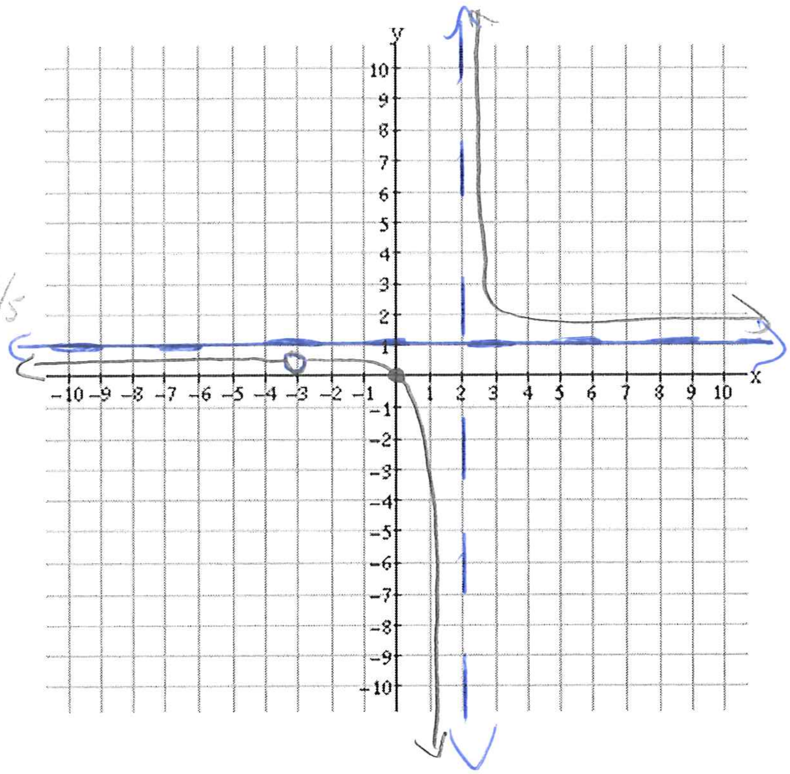
College Algebra **Name:** Key

Unit 2B LT 2.6 PRACTICE Day 3 **Date:** ______ **Period:** ______

Identify the key information for the following rational functions, then graph.

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



Vertical Asymptote: $x=2$

Horizontal Asymptote: $y=1$

Hole(s): $(-3, 3/5)$ $\frac{-3}{-3-2} = \frac{-3}{-5} = 3/5$

Domain: $(-\infty,-3)(-3,2)(2,\infty)$

Range: $(-\infty, 3/5)(3/5, 1)(1,\infty)$

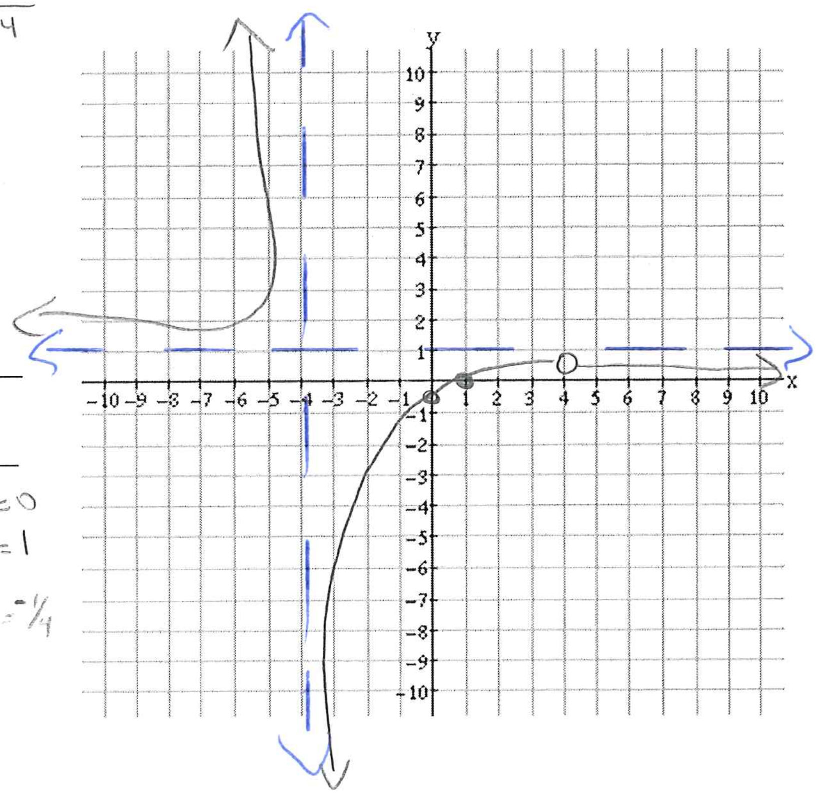
x-intercept(s): $(0,0)$ $0=x$

y-intercept: $(0,0)$

End Behavior: As $x \to -\infty,\ f(x) \to$ 1

As $x \to \infty,\ f(x) \to$ 1

2.) $f(x) = \dfrac{x^2-5x+4}{x^2-16}$ $\dfrac{\cancel{(x-4)}(x-1)}{\cancel{(x-4)}(x+4)}$ $\dfrac{x-1}{x+4}$



Vertical Asymptote: $x=-4$

Horizontal Asymptote: $y=1$

Hole(s): $(4, 3/8)$ $\frac{4-1}{4+4}$ $\frac{3}{8}$

Domain: $(-\infty,-4)(-4,4)(4,\infty)$

Range: $(-\infty, 5/8)(5/8, 1)(1,\infty)$

x-intercept(s): $(1,0)$ $x-1=0$ $x=1$

y-intercept: $(0,-1/4)$ $\frac{0-1}{0+4} = -1/4$

End Behavior: As $x \to -\infty,\ f(x) \to$ 1

As $x \to \infty,\ f(x) \to$ 1

3.) $f(x)=\frac{x^2-25}{x+5}$ $\frac{(x-5)\cancel{(x+5)}}{\cancel{(x+5)}}$ $(x-5)$

Vertical Asymptote: none

Horizontal Asymptote: none

$x+5=0$
$-5\ \ -5$

$-5-5=-10$

Hole(s): $(-5,-10)$

Domain: $(-\infty,-5)\ (-5,\infty)$

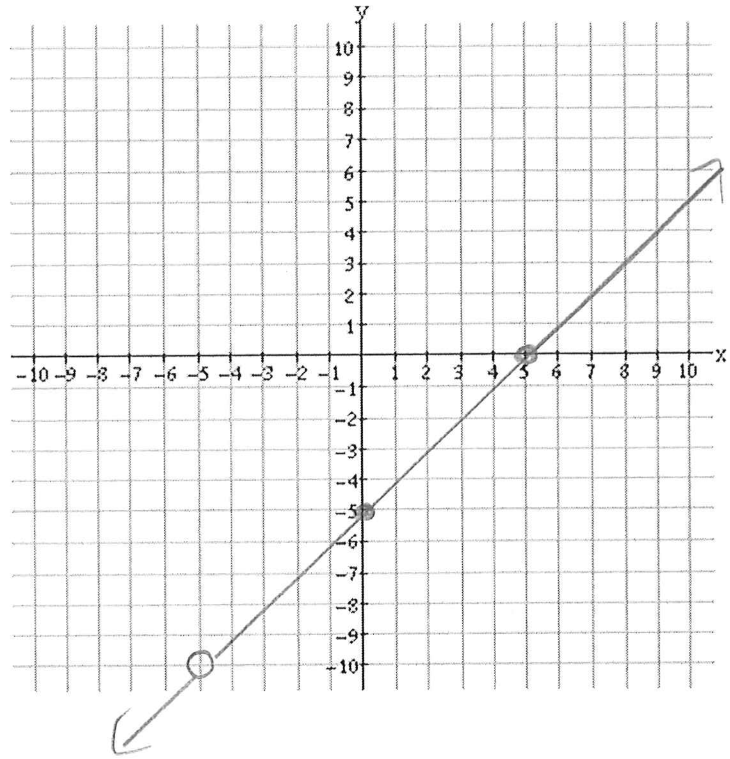
Range: $(-\infty,-10)\ (-10,\infty)$

x-intercept(s): $(5,0)$ $0=x-5$ $5=x$

y-intercept: $(0,-5)$ $0-5=$

End Behavior: As $x\rightarrow-\infty$, $f(x)\rightarrow$ $-\infty$

As $x\rightarrow\infty$, $f(x)\rightarrow$ ∞



4.) $f(x)=\frac{x}{2x^2-4x}$ $\frac{\cancel{x}}{2\cancel{x}(x-2)}$ $\frac{1}{2(x-2)}$

Vertical Asymptote: $x=2$

Horizontal Asymptote: $y=0$

Hole(s): $(0,-1/4)$ $\frac{1}{2(0-2)}$ $-\frac{1}{4}$

Domain: $(-\infty,0)\ (0,2)\ (2,\infty)$

Range: $(-\infty,-1/4)\ (-1/4,0)\ (0,\infty)$

x-intercept(s): none

y-intercept: none

End Behavior: As $x\rightarrow-\infty$, $f(x)\rightarrow$ 0

As $x\rightarrow\infty$, $f(x)\rightarrow$ 0