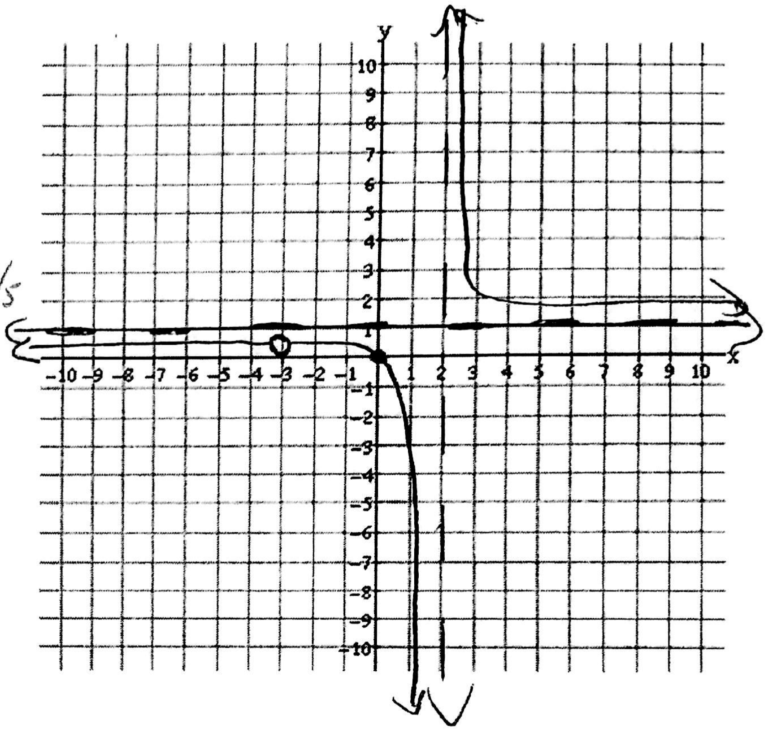
College Algebra **Name:** Key

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): $(-3, 3/5)$ $\dfrac{-3}{-3-2}=\dfrac{-3}{-5}=3/5$

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

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

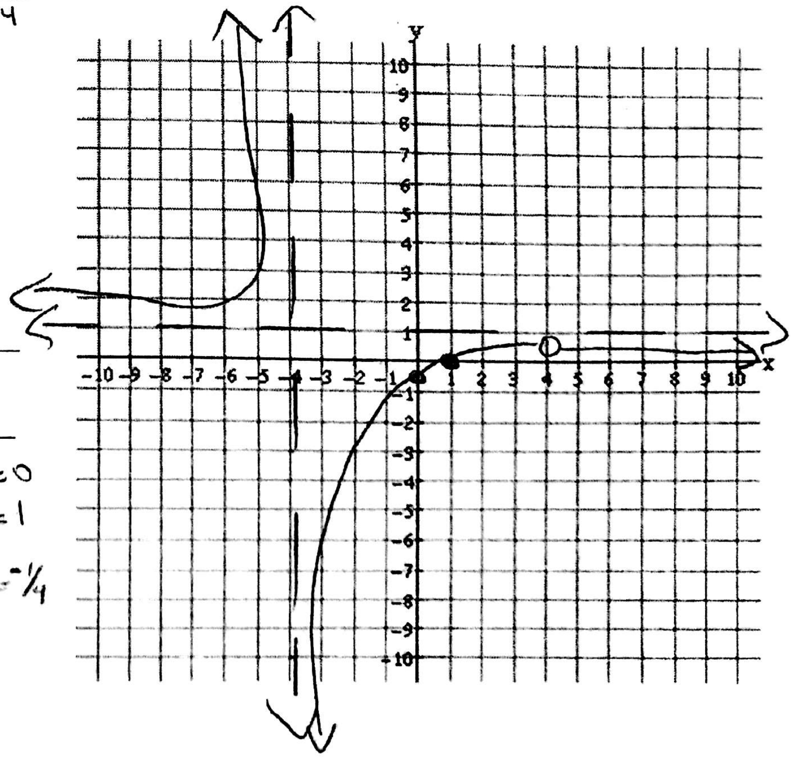
x-intercept(s): $(0,0)$ $0=x$

y-intercept: $(0,0)$

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

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

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): $(4, 5/8)$ $\dfrac{4+1}{4+4}$ $\dfrac{5}{8}$

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: $(0,-1/4)$ $\dfrac{0-1}{0+4}=-1/4$

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

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

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

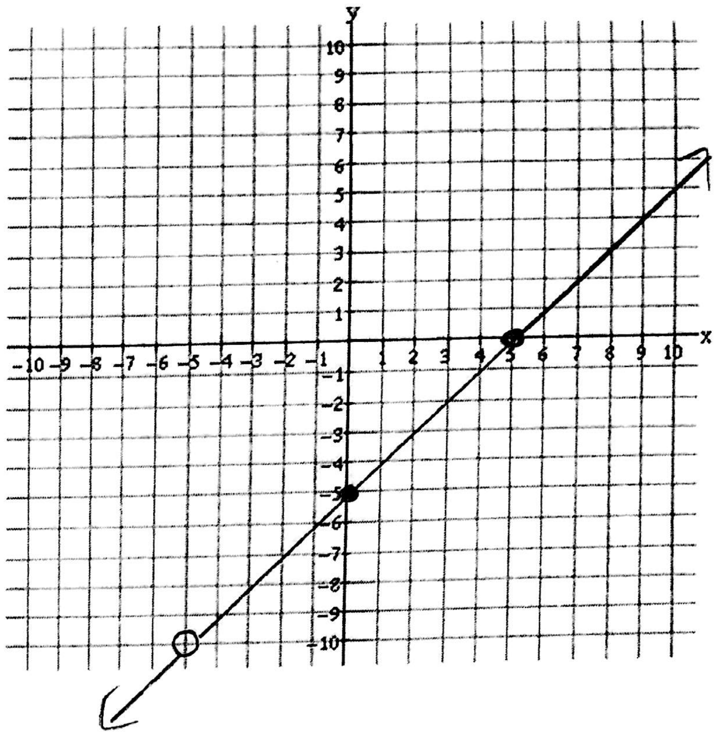
Range: $(-\infty, -10)\ (-10, \infty)$

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

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

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

As $x \to \infty$, $f(x) \to$ ∞



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 $x \to -\infty$, $f(x) \to$ 0

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