Name: KEY Date: _____

Math 1050 PRACTICE Quiz (5.1-5.3)

For problems 1 to 3, consider the function $f(x) = \frac{3x-7}{x^2-3x+2}$

1. The domain of the function $f(x)$ is $\{x \mid x \neq 1, 2\}$

$$f(x) = \frac{3x-7}{(x-2)(x-1)}$$

2. The $x-intercept(s)$ of $f(x)$ is (are) $\left(\frac{7}{3}, 0\right)$ (write answer(s) as an ordered pair(s))

$$0 = 3x - 7 \qquad x = \frac{7}{3}$$
$$\frac{7}{3} = \frac{3x}{3}$$

3. The $y-intercept(s)$ of $f(x)$ is (are) $\left(0, -\frac{7}{2}\right)$ (write answer(s) as an ordered pair(s))

$$y = \frac{3(0)-7}{(0)^2-3(0)+2} = \frac{-7}{2}$$

For problems 4 to 5, consider the function $g(x) = \frac{x^2+4x+7}{x-1}$. Write your answer(s) in equation form.

4. The vertical asymptote(s), if any, of the function $g(x)$ is (are) $x = 1$

5. The non-vertical asymptote(s), if any, of the function $g(x)$ is (are) $y = x + 5$

	x	5	
x	x^2	$5x$	x^2+5x+7
−1	$-1x$	-5	

6. If $x = -5$ is a zero (root) of a polynomial $P(x)$ then $(x+5)$ is a factor of $P(x)$.

7. Consider the rational function $f(x) = \frac{x-4}{x^2-9}$.

$f(x) = \frac{x-4}{(x+3)(x-3)}$

a) State the domain of $f(x)$ in interval notation.

$D: \{x \mid x \neq -3, 3\}$

$(-\infty, -3) \cup (-3, 3) \cup (3, +\infty)$

b) Find the intercepts of $f(x)$, if any. Write the answer as an ordered pair.

x-int: $0 = x - 4$, $x = 4$, $\boxed{(4, 0)}$

y-int: $y = \frac{0-4}{0^2-9} = \frac{4}{9}$, $\boxed{(0, \frac{4}{9})}$

c) Find all asymptotes of $f(x)$. Write the answer as an equation.

V.A. at $x = -3$ and $x = 3$

H.A. at $y = 0$

d) Determine whether the graph crosses a non-vertical asymptote.

$0 = \frac{x-4}{x^2-9} \rightarrow 0 = x - 4 \rightarrow x = 4$ (crosses the line $y = 0$)

e) Use the above information and other appropriate points to draw its graph. Your graph should clearly show and label all x and y-intercepts (if applicable) and asymptotes.

x	
-4	-1.1
-2	1.2
-1	0.6
1	0.4
5	0.06
-5	-0.6