MAC 1105, Quiz #10 Name:_____

No calculators are allowed on this quiz. Please read each question carefully, follow directions and clearly mark your solutions. **Show your work for full credit.**

Let $f(x) = \dfrac{x(x-1)}{x^2-1}$. Follow the procedure outlined below.

1. Domain

$x^2 - 1 \neq 0$

$x^2 \neq 1$

$x \neq \pm 1$

$\{x \mid x \neq \pm 1\}$

$(-\infty, -1) \cup (-1, 1) \cup (1, \infty)$

2. y-intercept

$f(0) = \dfrac{0}{0-1} = 0$ $\quad (0,0)$

3. x-intercept

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

$x = 0$

$(0,0)$

4. Vertical asymptote(s)

$x + 1 = 0$

$x = -1$

($x = 1$ is a hole.)

5. Horizontal asymptote(s)

$\dfrac{x}{x+1}$ $\to$ deg = 1 $\to$ deg = 1

$y = \dfrac{1}{1}$

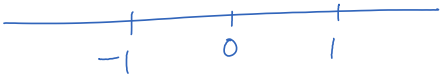
$y = 1$ is the hor. asymptote

6. Symmetries

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

neither odd nor even

7. Sign chart



	$(-\infty, -1)$	$(-1, 0)$	$(0, 1)$	$(1, \infty)$
pt	-2	-0.5	0.5	2
x	−	−	+	+
$x-1$	−	−	−	+
$f(x)$	+	+	−	+

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