Quiz 3

NAME:
PERM:
SECTION: T 8 AM / T 4 PM / T 5 PM / T 6 PM / TH 6 PM

1. Evaluate each of the following limits or write DNE if the limit doesn't exist. Show your work.

(a) $\lim_{y\to 2} \dfrac{y^2-3y+2}{y^2-4}$ $= \lim_{y\to 2} \dfrac{(y-1)(y-2)}{(y+2)(y-2)}$

$= \lim_{y\to 2} \dfrac{y-1}{y+2} = \dfrac{2-1}{2+2} = \dfrac{1}{4}.$

(b) $\lim_{x\to -1} \dfrac{x^2-x-1}{x}$ $= \dfrac{(-1)^2-(-1)-1}{-1} = \dfrac{1+1-1}{-1} = \dfrac{1}{-1} = -1.$

(c) $\lim_{t\to 4^-} \dfrac{t(|t-4|)}{t-4}$

By definition $|t-4| = \begin{cases} t-4, & \text{if } t-4 \geq 0 \\ -(t-4), & \text{if } t-4 < 0. \end{cases}$

Since we are taking the limit from the left, $t-4 < 0$,

so $\lim_{t\to 4^-} \dfrac{t(|t-4|)}{t-4} = \lim_{t\to 4^-} \dfrac{-t(t-4)}{t-4} = \lim_{t\to 4^-} -t = -4.$