9/16/2005 MATH261 Calculus I Name:_____
Dr. Lunsford Quiz 4 (20 Points Total)

You must show all work on this quiz for full credit.

1. Given the function $f(x)=\begin{cases}\dfrac{x^2-x}{1-x^2}, & x<1\\ \dfrac{-x}{x+1}, & x\geq 1\end{cases}$ determine if f is continuous at $x=1$. (6 points)

2. Use the function $f(x)=\dfrac{2+x-x^2}{x^2-5x+6}$ to answer the following questions (4 points each, 8 total):

(a) Is the line $x=2$ a vertical asymptote for this function? Why or why not?

(b) Is the line $x=3$ a vertical asymptote for this function? Why or why not?

3. Find the indicated limits. If the limit DNE as a number please determine if it exists in the infinite sense. (3 points each, 6 total)

(a) $\lim\limits_{w\to -3^+}\dfrac{w+2}{w+3}$

(b) $\lim\limits_{\theta\to -\pi/3}\dfrac{\sin(\theta)}{\cos(\theta)+1}$ (you must give the exact value for this limit, not a calculator approximation)