Math 166: Honors Calculus II Name:_____
Quiz 9 *Apr. 4, 1996*

1. a) Prove that $\sum_{n=0}^{\infty} x^n$ converges to $\frac{1}{1-x}$ if $|x| < 1$.

b) Prove that $\sum_{n=1}^{\infty} \frac{1}{n}$ diverges.

2. Prove that the series converges to the indicated sum.

a) $\displaystyle\sum_{n=0}^{\infty} \frac{3^{n-1}+4^{n+1}}{5^n} = \frac{125}{6}$.

b) $\displaystyle\sum_{n=1}^{\infty} \frac{n}{(n+1)!} = 1$. (Hint: Show that $\displaystyle\frac{n}{(n+1)!} = \frac{1}{n!} - \frac{1}{(n+1)!}$).