Mathematics 552 Quiz #3 Name:_____

Let $f = u + iv$ be a complex valued function which is analytic on the open subset U of $\mathbf{C}$.

1. State the Cauchy-Riemann equations for f.

2. Derive the Cauchy-Riemann equations for f by computing $f'(z) = \lim_{\Delta z \to 0} \dfrac{f(z + \Delta z) - f(z)}{\Delta z}$ in two ways. First by computing the limit with $\Delta z = \Delta x \to 0$ through real values and second by computing the limit with $\Delta z = i\Delta y \to 0$ through pure imaginary valres.