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

1. State the Cauchy-Riemann equations for \( f \).

2. Derive the Cauchy-Riemann equations for \( f \) by computing \( f'(z) = \lim_{\Delta z \to 0} \frac{f(z + \Delta z) - f(z)}{\Delta z} \) 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 values.