

Quiz 1(10 points)

Name:

ID:

- (1) Compute the real and imaginary parts of $\frac{i}{3z+2}$, where z is the complex number $x + yi$ and $x, y \in \mathbb{R}$. (6 points)
- (2) Compute complex conjugate of $\frac{i}{3z+2}$, where z is the complex number $x + yi$ and $x, y \in \mathbb{R}$. (4 points)

$$(1) \cdot \frac{i}{3(x+yi)+2} = \frac{i}{3x+2+3yi} = \frac{i(3x+2-3yi)}{(3x+2+3yi)(3x+2-3yi)}$$

$$= \frac{3y + (3x+2)i}{(3x+2)^2 + (3y)^2}$$

Real part: $\frac{3y}{(3x+2)^2 + (3y)^2}$

Imaginary Part: $\frac{3x+2}{(3x+2)^2 + (3y)^2}$

(2) Complex Conjugate: $\frac{3y - (3x+2)i}{(3x+2)^2 + (3y)^2}$