

301 Mathematical Physics II

Student Name: _____

Student ID no.: _____

”Mathematics is the language in which God has written the universe.”

– Galileo Galilei.

Answer the following questions:

1. (1 Point) Find the real and imaginary parts, $u(x, y)$ and $v(x, y)$, of the following function:

$$f(z) = \frac{2z - i}{iz + 2}$$

2. (1 Point) Find the real and imaginary parts, $u(x, y)$ and $v(x, y)$, of the following function:

$$e^{iz}$$

3. (2 Points) Given the Cauchy-Riemann conditions: $u_x = v_y$ and $u_y = -v_x$, determine whether the previous functions are analytic or not.

4. (1 Point) Given that $z_1 = 5 - i$ and $z_2 = 4i$, find

- $z_1 z_2$

- $z_1 - \overline{z_2}$

- $\overline{z_1} / \overline{z_2}$
