

Multivariable and Complex Analysis Quiz VII**SHOW ALL WORK TO RECEIVE FULL CREDIT**

1. (10) Is the below series convergent or divergent? Give a reason and show your details.

$$\sum_{n=0}^{\infty} \frac{n+i}{3n^2+2i}$$

2. (15) Find the center and the radius of convergence of

$$\sum_{n=0}^{\infty} 4^n (z+1)^n$$

3. (20) Find the Maclaurin series and the radius of convergence for

$$\frac{z+2}{1-z^2}$$

4. (25) Find the Taylor series with center $z_0 = i$ and the radius of convergence for

$$f(z) = z^4$$

5. (25) Find the Taylor series with center $z_0 = 2i$ and the radius of convergence for

$$f(z) = \frac{1}{z}$$