Math 165B Midterm

- *The exam is on Wednsday, 05/16, 11.10am – 12:00am.*
- *In each problem, you have to show every step of your calculation. Any cheating will cause serious consequences. Thank you for your cooperations.*

1. (10 points) Give a definition of the residue at an isolated singular point.

2. (30 points) Find the Laurent series of $\frac{1}{z^2-11z+30}$ on $5 < |z| < 6$.

3. (30 points) Find the integral of $\frac{1}{z^2-z-30}$ along the counterclockwise curve $|z| = 165$.

4. (30 points) Find the integral $\int_0^{+\infty} \frac{\ln x}{x^2+11x+30} dx$.