

Show all work. 5 points each.

1. Describe/Draw the region in the complex plane satisfying the inequality

$$\frac{1}{|z - 1 - i|} < 1 .$$

2. Show that  $\sum_{n=0}^{\infty} z^n = \frac{1}{1 - z}$  if  $|z| < 1$ . MAKE SURE TO DISCUSS WHY IT CONVERGES.