

**MATH 1151 QUIZ-10** (15 minutes)

**1.(5 points)** Write the equation  $r = \sin \theta - \cos \theta$  in polar coordinates (x,y).

**Solution:** Since  $\sin \theta = \frac{y}{r}$  and  $\cos \theta = \frac{x}{r}$  we see that equation turns to  $r^2 = x - y$ , i.e.  $x^2 + y^2 = x - y$ , i.e.  $(x - \frac{1}{2})^2 + (y + \frac{1}{2})^2 = \frac{1}{2}$  which is a circle with radius  $r = \frac{1}{\sqrt{2}}$  and center  $(\frac{1}{2}, -\frac{1}{2})$ . **Q.E.D.**

**2.(5 points)** Write  $4 - 4i$  in polar form, express the argument in radians.

**Solution:** It is clear that point is in the 4th quadrant and since x and y coordinates are same in terms of length we see that argument is  $\theta = \frac{7\pi}{4}$  and in polar form  $4 - 4i = 4\sqrt{2}(\cos \frac{7\pi}{4} + \sin \frac{7\pi}{4})$ . **Q.E.D.**