

## Math 53 Discussion Problems Sept 5

1. Convert the polar equations to Cartesian equations and sketch their graphs.

(a)  $r = -3 \sec \theta$

(b)  $r = 4 \tan \theta \sec \theta$

2. Convert the Cartesian equations to polar equations and sketch their graphs.

(a)  $x^2 - y^2 = 1$

(b)  $x^2 + (y - 2)^2 = 4$

3. Find the slope of the tangent to the polar curve at the given point.

(a)  $r = -1 + \sin \theta, \theta = 0$

(b)  $r = \cos(2\theta), \theta = \frac{\pi}{2}$