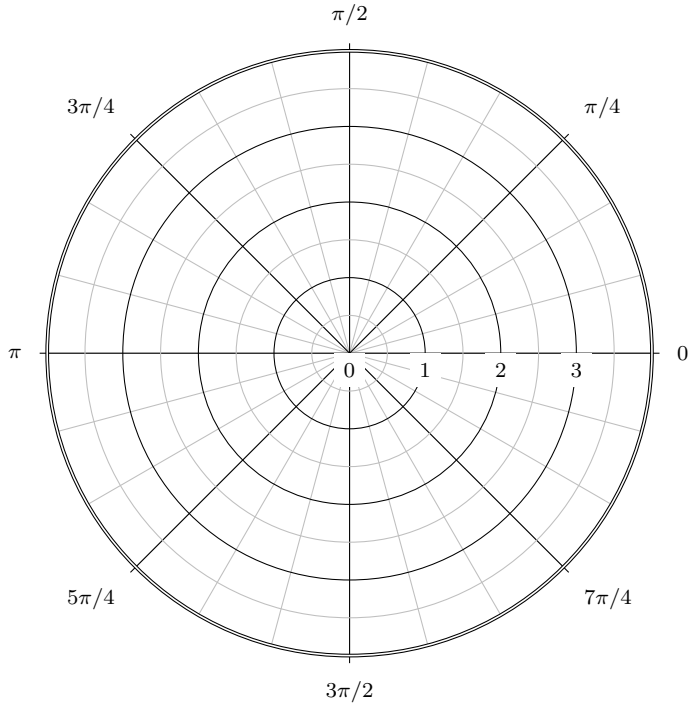
MATH 2300-015 QUIZ 13 (in class) Name: _____

1. For $(x, y) = (1, -\sqrt{3})$ in Cartesian coordinates, find two representations (r, θ) in polar coordinates with $-\pi \leq \theta \leq \pi$.

2. Find the Cartesian coordinates (x, y) of the point with polar coordinates $(r, \theta) = (-\sqrt{2}, 3\pi/4)$.

3. Sketch the graph of the polar curve $r = 1 + 2\cos\theta$, $0 \leq \theta \leq 2\pi$. Indicate the angles at whcih $r = 0$.



4. Consider the parametric curve

$$(x(t), y(t)) = (e^t \cos t, e^t \sin t),\ 0 \leq t \leq \pi.$$

(a) For what value(s) of t does the curve have a horizontal tangent line?

(b) Find the length of the curve.