

Worksheet 9
10/26/2023

1. Plot the point whose polar coordinates are given. Then find two other pairs of polar coordinates of this point, one with $r > 0$ and one with $r < 0$. Then find the Cartesian coordinates of the point.

(a) $(-2, 3\pi/2)$

(b) $(2, -11\pi/4)$

2. The Cartesian coordinates of a point are given. Find a pair of polar coordinates (r, θ) where $r > 0$, $0 \leq \theta < 2\pi$ and a pair of polar coordinates (r, θ) where $r < 0$, $-\pi < \theta \leq \pi$.

(a) $(-4, 4)$

(b) $(\sqrt{3}, -1)$

3. Sketch the polar curve $r = 1 - \cos \theta$ where $0 \leq \theta \leq 3\pi$.

4. Find the area enclosed by the curve in Problem 3.

5. Find the area of the shaded region below.

