

1. Convert each point from rectangular coordinates to polar coordinates

(a) $(2, 2)$ (b) $(-3, 6)$ (c) $(-5, 0)$

2. Convert each point from polar coordinates to rectangular coordinates

(a) $\left(2, \frac{\pi}{3}\right)$ (b) $(-2, \pi)$ (c) $\left(-2, \frac{\pi}{2}\right)$

3. Convert each equation from rectangular coordinates to polar coordinates

(a) $y = x$ (b) $(x + 3)^2 + y^2 = 9$ (c) $y = 7$

4. Convert each equation from polar coordinates to rectangular coordinates

(a) $\theta = \frac{2\pi}{3}$ (b) $r = 4 \sec(\theta)$ (c) $r = 4 \sin(\theta)$

5. Sketch the region $1 \leq r \leq 3, 0 \leq \theta \leq \pi$

6. Sketch the region $2 \leq r \leq 4 \sin(\theta)$