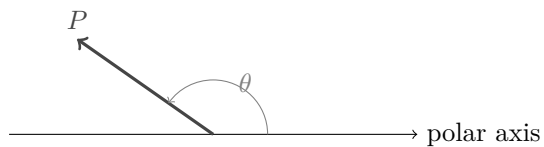
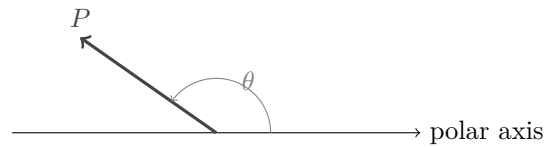


Question 1**Problem**

The point has polar coordinates $(-4, \pi/3)$. Give two equivalent representations with positive radius and locate its quadrant.



Question 1 – Solution**Solution**

1. Use the polar–Cartesian relationships

$$x = r \cos \theta, \quad y = r \sin \theta, \quad r^2 = x^2 + y^2.$$

Equivalent polar coordinates satisfy

$$(r, \theta) = (r, \theta + 2k\pi) = (-r, \theta + (2k + 1)\pi).$$

2. Apply the identity that matches the requested conversion, symmetry test, or intersection, and then check the resulting point or curve in the original polar equation.
3. Adding π while changing the radius sign gives $(4, 4\pi/3)$; also $(4, -2\pi/3)$.
4. It lies in Quadrant III.