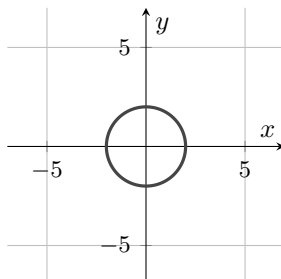
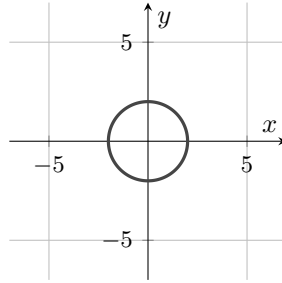


Question 9**Problem**

A polar path has constant arc-length speed 5 and runs for an angular interval of width $2\pi/3$. What is its length?



Question 9 – Solution**Solution**

1. Differentiate the polar radius to obtain $r' = dr/d\theta$ and choose an interval that traces the requested arc exactly once.
2. Use the polar arc-length formula

$$L = \int_a^b \sqrt{r^2 + \left(\frac{dr}{d\theta}\right)^2} d\theta.$$

Simplify the expression under the square root before evaluating or reporting the integral.

3. Arc length is the integral of speed: $L = 5(2\pi/3) = \boxed{10\pi/3}$.