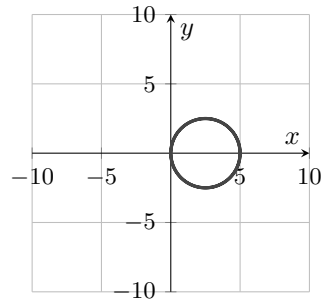
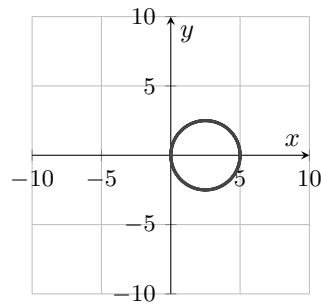


Question 8**Problem**

Which description better reveals the geometry of $x^2 + y^2 = 5x$: Cartesian or polar? Convert it and explain.



Question 8 – 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. Polar form is $r = 5 \cos \theta$, immediately revealing a circle through the pole with diameter 5 along the polar axis.