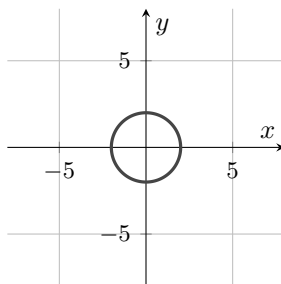
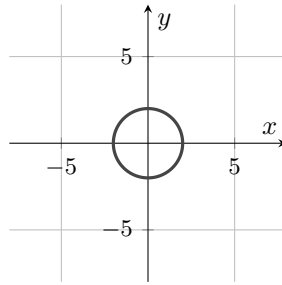


Question 5**Problem**

Find the area inside $r = 2$ but outside $r = 2 \cos \theta$.



Question 5 – Solution**Solution**

1. Determine an interval of angles that sweeps out the requested region exactly once, using symmetry when it simplifies the work.
2. For a polar boundary $r = f(\theta)$, use

$$A = \frac{1}{2} \int_a^b r^2 d\theta.$$

For a region between two curves, subtract the inner squared radius from the outer squared radius before integrating.

3. The circle $r = 2 \cos \theta$ lies entirely inside $r = 2$.
4. Subtract areas: $4\pi - \pi = \boxed{3\pi}$.