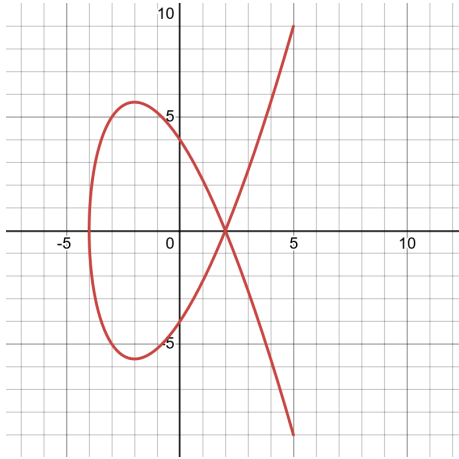


For the curve defined by the parametric equations

$$x = t^2 - 4, y = t^3 - 6t$$



1. Find and label 4 points on the graph.

2. Find $\frac{dy}{dx}$

3. Find the slopes both tangent lines at $(2, 0)$ hint: make sure to find t first.

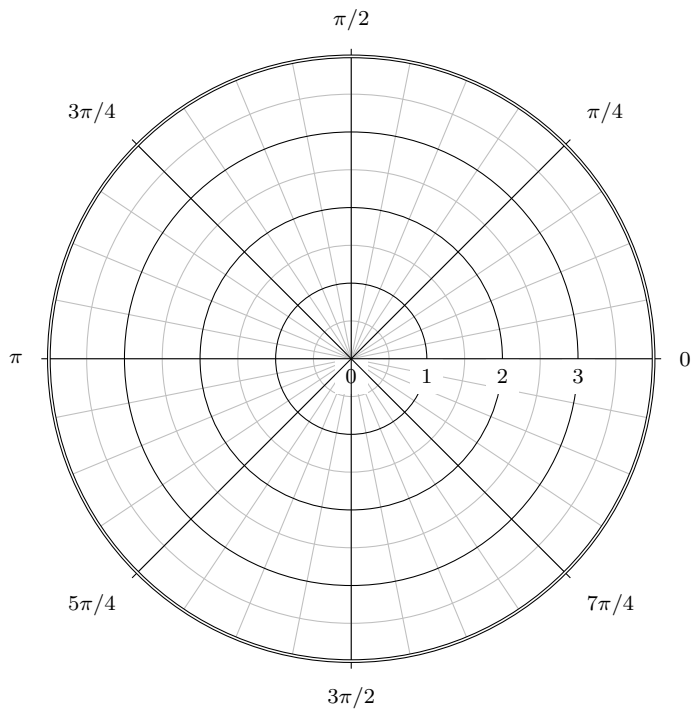
4. Find the arc length of the curve given above for $-3 < t < 3$

5. Find the area enclosed by the loop of the curve.

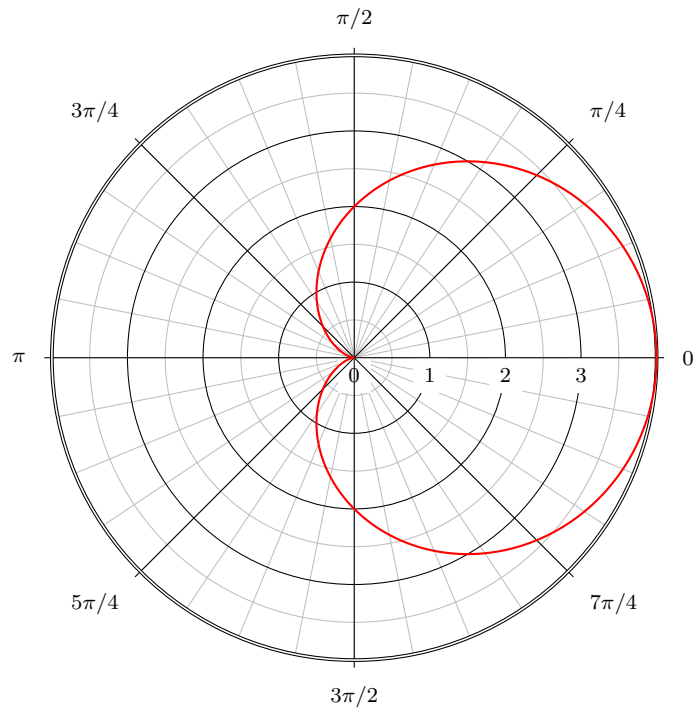
1. Convert the rectangular coordinates $(-3, 3)$ to polar coordinates

2. Convert the polar coordinates $(-4, \frac{\pi}{3})$ to rectangular coordinates

3. Draw a quick sketch of three polar equations: $r = 2$, $\theta = \frac{\pi}{3}$, $r = 2 \sin(\theta)$



4. Find the area enclosed by the curve $r = 2 + 2 \cos(\theta)$



5. Find the points on the curve $r = 2 + 2 \cos(\theta)$ where the tangent lines are horizontal.

6. Find the area enclosed by $r = 2 \sin(2\theta)$

