

All Those Bears Look The Same To Me

First, do the following problems from the chapter review:

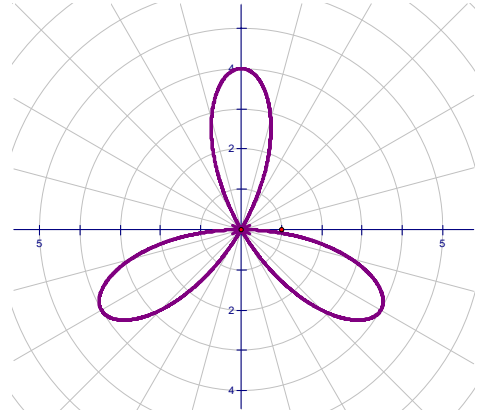
p. 676-678: 5, 7, 9, 11, 14, 16, 17, 19, 21, 23, 25, 29, 31, 33, 37, 41, 52, 53-61 odd.

Then:

1. The graph of $r = 4 \cos(3\theta + \pi/2)$ is shown at right.

a. Find all values of $\theta \in [0, 2\pi)$ such that the graph crosses the pole (aka origin).

b. Give the interval of θ which describes the upper petal.

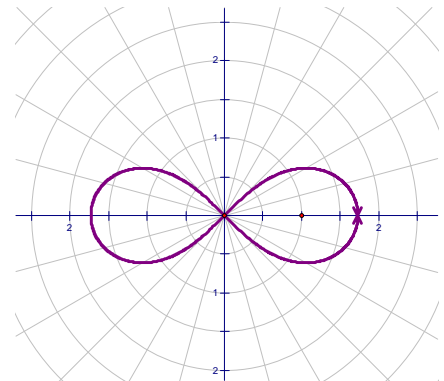


2. The graph of $r^2 = 9 \cos 2\theta$ is shown at right.

a. For what values of θ in $[0, 2\pi)$ is r even defined?

b. Label each part of the graph with the corresponding θ interval (in $[0, 2\pi)$).

c. Rewrite the equation in rectangular form.



3. Find the area of the region between the graphs of $r = 4$ and $r = 2 \sec \theta$. (You first have to graph these, which you can do on your calculator but COBRA).

4. If a and b are constants such that $ab \neq 0$, prove that the graph of $r = a \cos \theta + b \sin \theta$ is a circle. Then find its center, in terms of a and b .