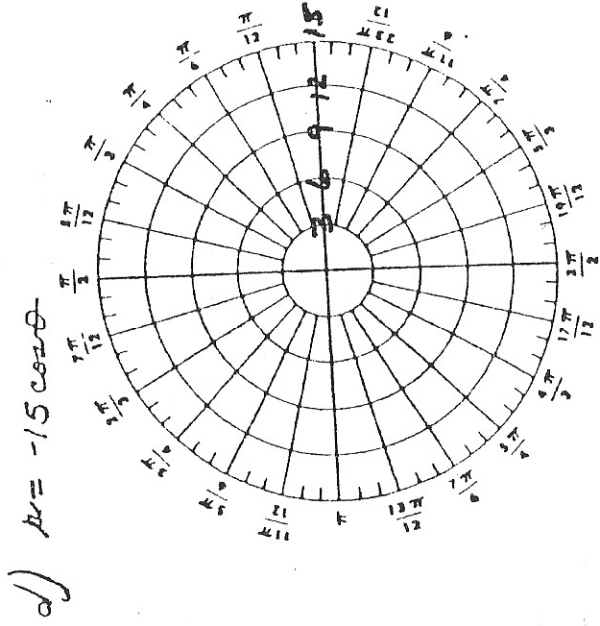
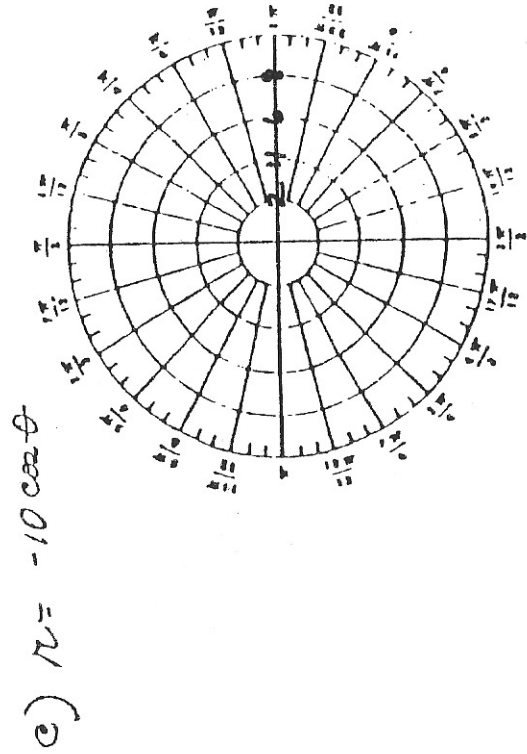
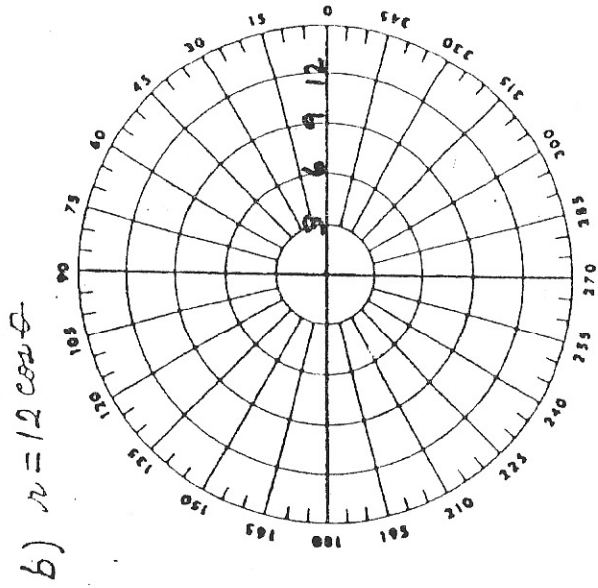
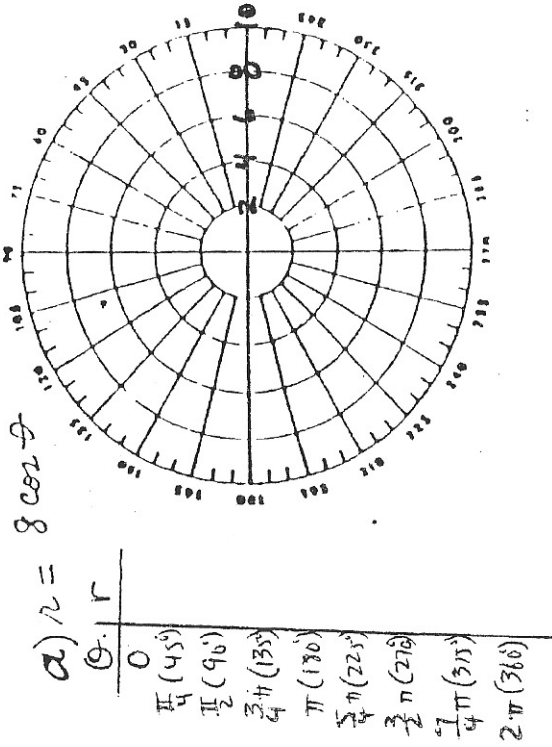


Polar Equations (10.2)

I Sketch each graph. (Use MODE: Polar and ZOOM: 5 (Square))
 For each page graph me with a table & the rest w/ a calculator

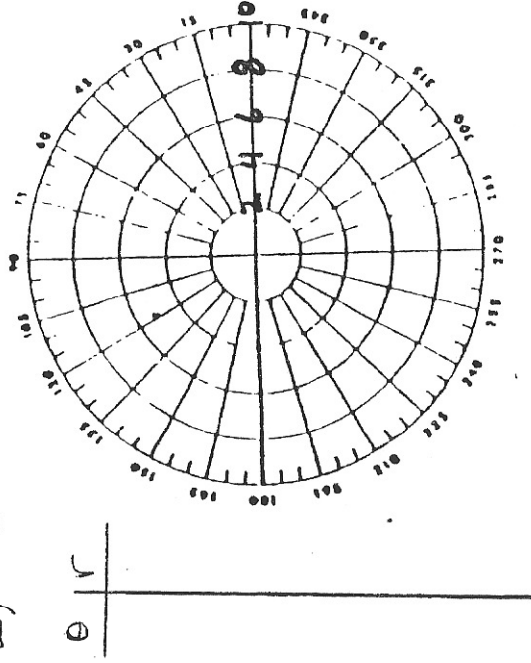


These polar graphs appear to be circles.

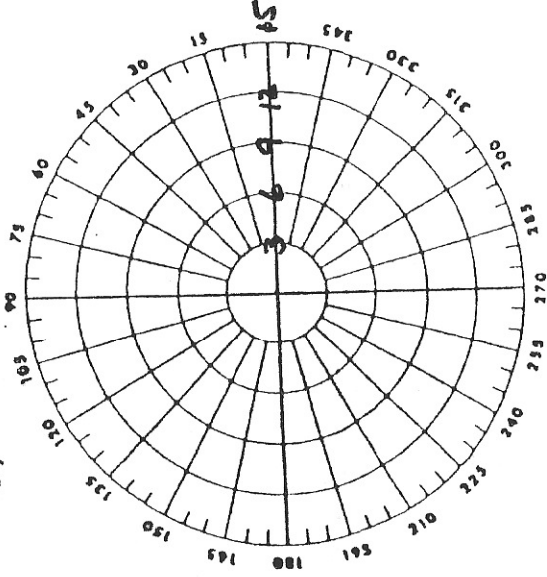
1. Make a conjecture concerning the radius of the circle.
2. Make a conjecture for $r = a \cos \theta$ if $a > 0$ and $a < 0$.
3. These graphs are symmetric to _____.

II Sketch each graph

a) $r = 8 \sin \theta$

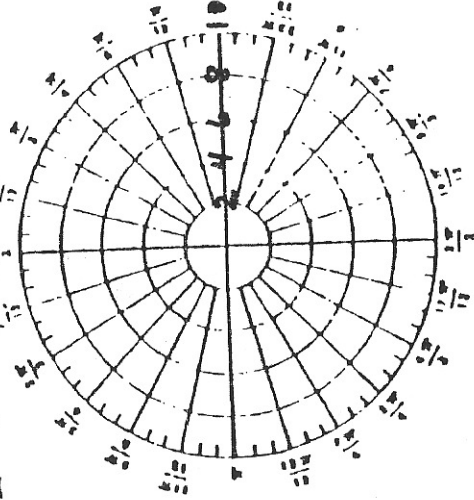


b) $r = 14 \sin \theta$

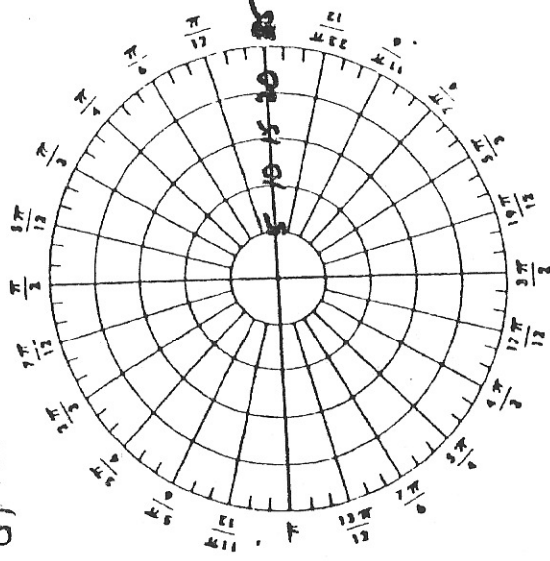


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c) $r = -9 \sin \theta$



d) $r = -20 \sin \theta$



These polar graphs appear to be circles.

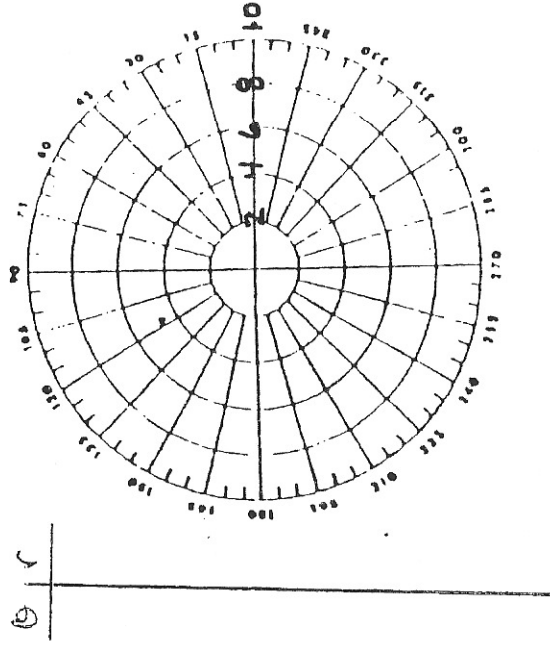
4. Make a conjecture concerning the radius of the circle.

5. Make a conjecture for $r = a \sin \theta$ if $a > 0$ and $a < 0$.

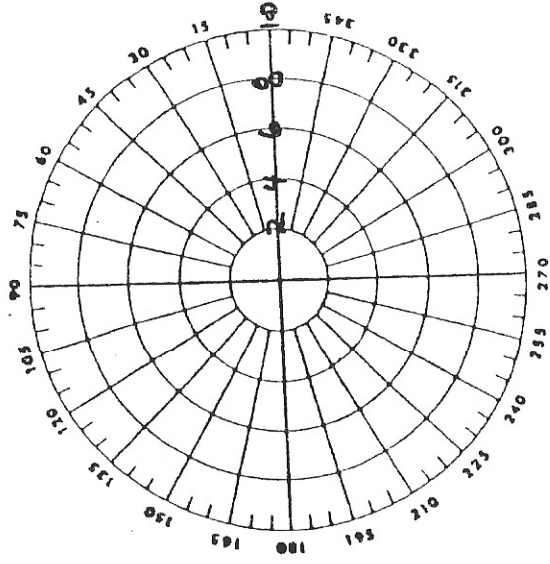
6. These graphs are symmetric to _____.

III Sketch each graph.

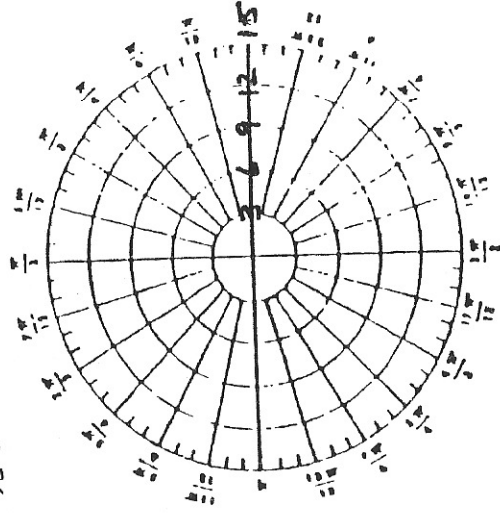
a) $r = 3 + 5 \cos \theta$



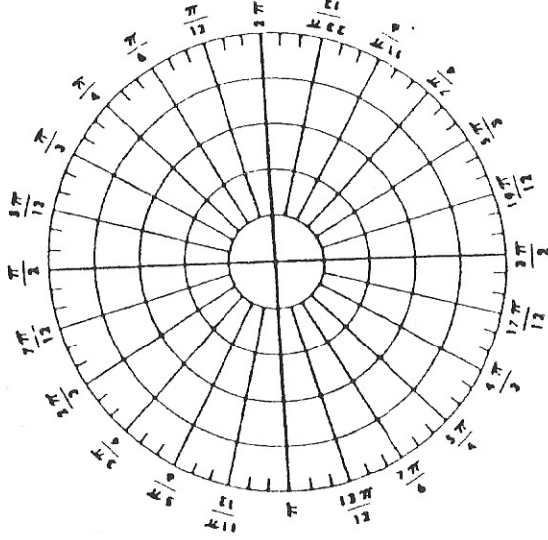
b) $r = 4 + 6 \sin \theta$



c) $r = 5 + 8 \cos \theta$



d) $r = 2 + 7 \sin \theta$



These polar graphs are called limaçons.

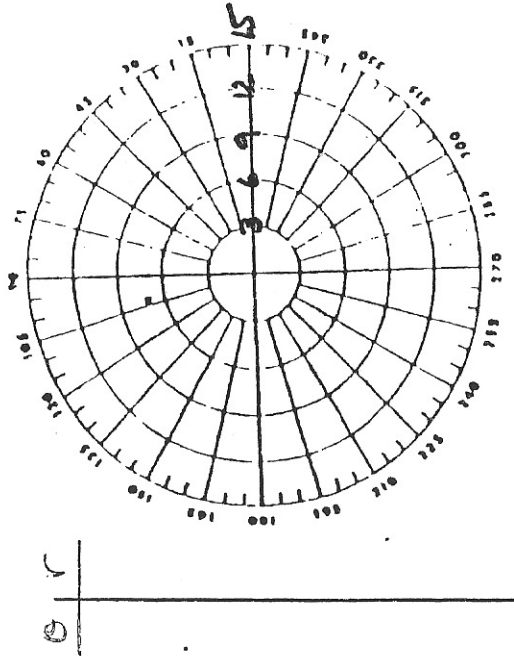
7. Make a conjecture concerning the line of symmetry.

8. Compare the graphs of $r = 5 + 8 \cos \theta$ to $r = -5 + 8 \cos \theta$.

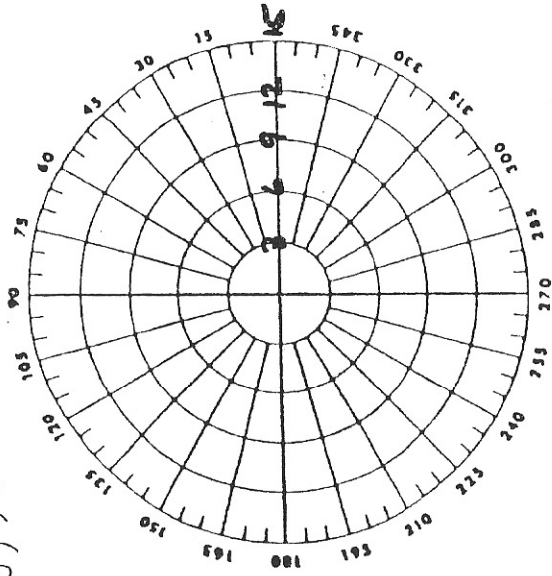
IV

Sketch each graph.

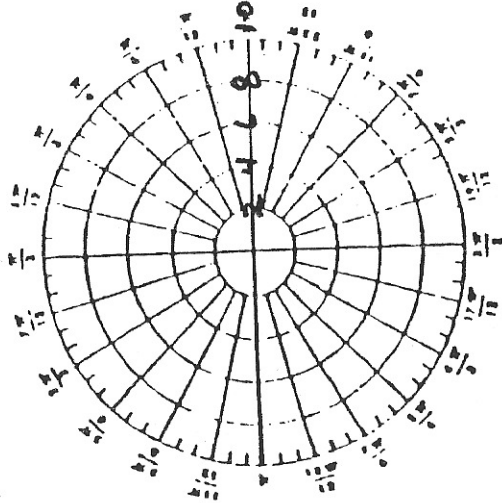
a) $r = 7 + 7 \cos \theta$



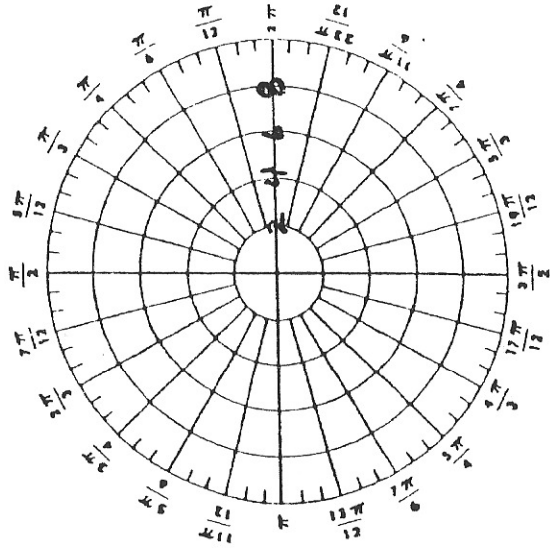
b) $r = 6 - 6 \cos \theta$



c) $r = 5 + 5 \sin \theta$



d) $r = -4 - 4 \sin \theta$

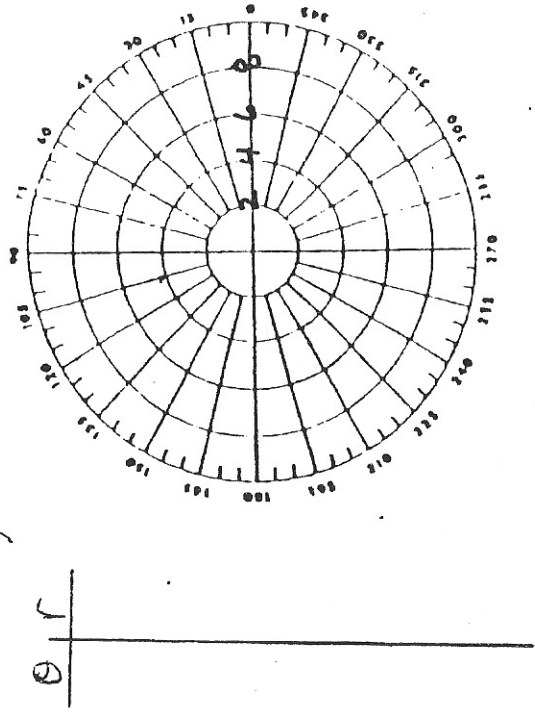


These polar graphs are called cardioids.

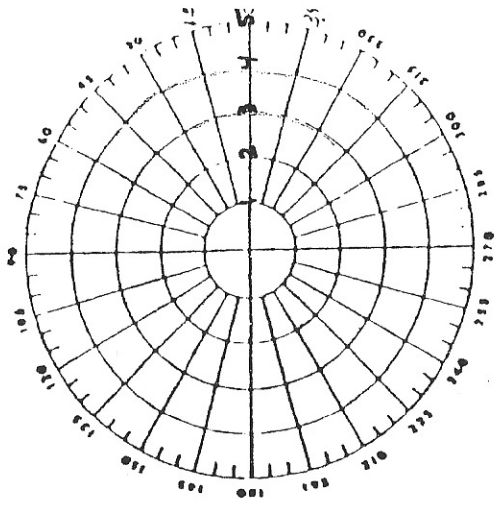
9. Make a conjecture concerning the lines of symmetry.

V Sketch each graph.

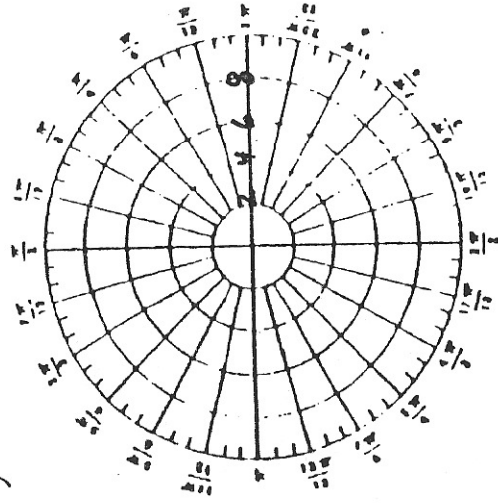
a) $r = 6 \cos 2\theta$



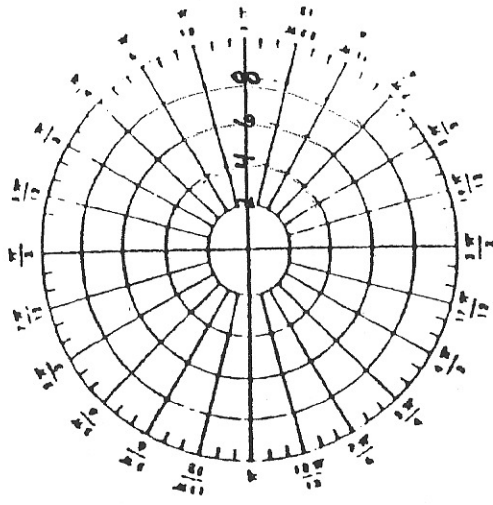
b) $r = -5 \cos 3\theta$



c) $r = 8 \sin 5\theta$



d) $r = -7 \sin 4\theta$



These polar graphs are called roses.

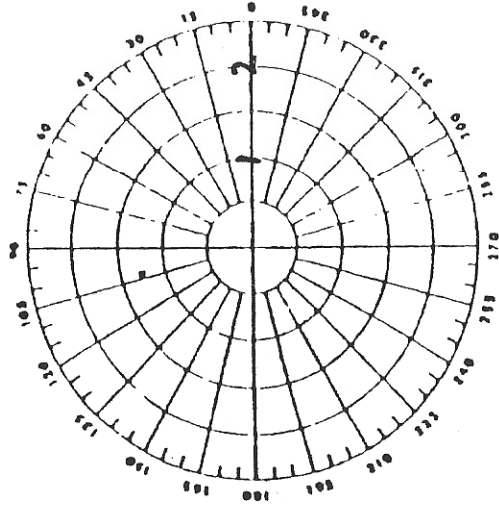
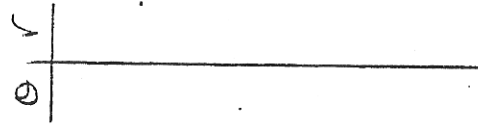
10. Make a conjecture concerning the length of each petal.

11. Make a conjecture for $r = a \cos n\theta$ if n is even and if n is odd.

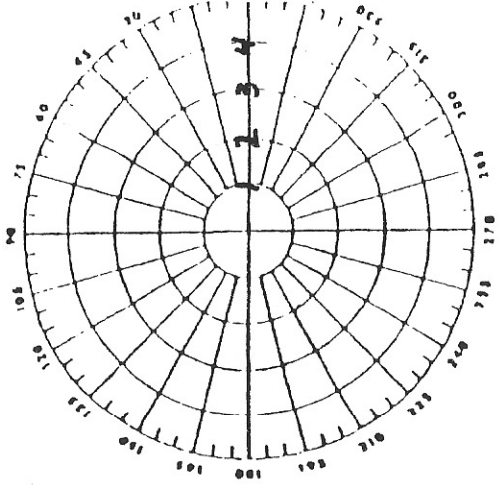
Make a conjecture concerning the value of "a" and "n" for equations $r = a \cos n\theta$
or $r = a \sin n\theta$.

VI Sketch each graph.

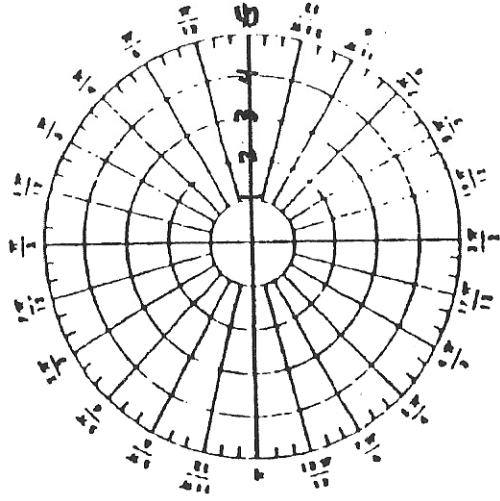
a) $r^2 = 4 \cos 2\theta$



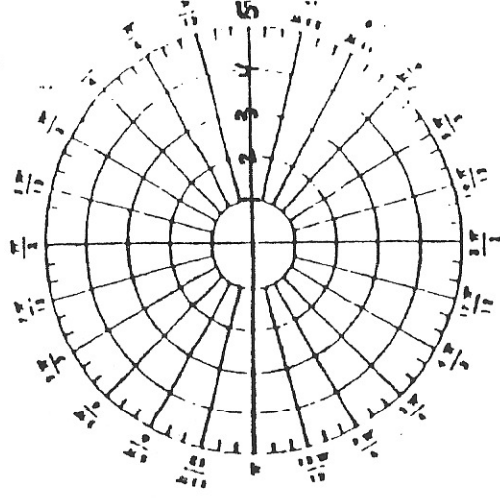
b) $r^2 = 8 \cos 2\theta$



c) $r^2 = 9 \sin 2\theta$



d) $r^2 = 7 \sin 2\theta$

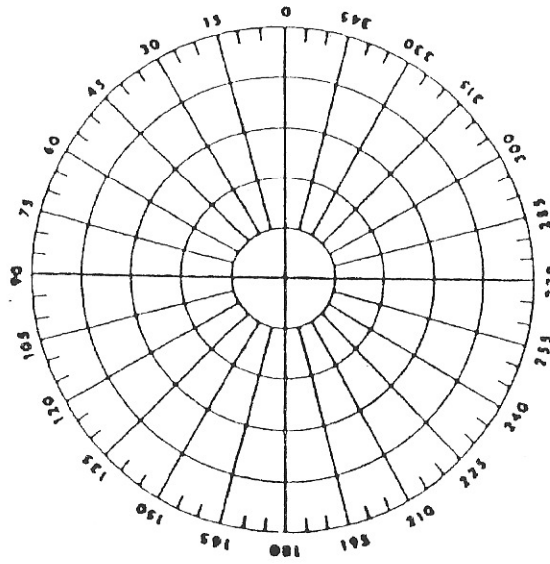


These polar graphs are called lemniscates.

13. Make a conjecture concerning the length of each petal.
14. Make a conjecture concerning the lines of symmetry

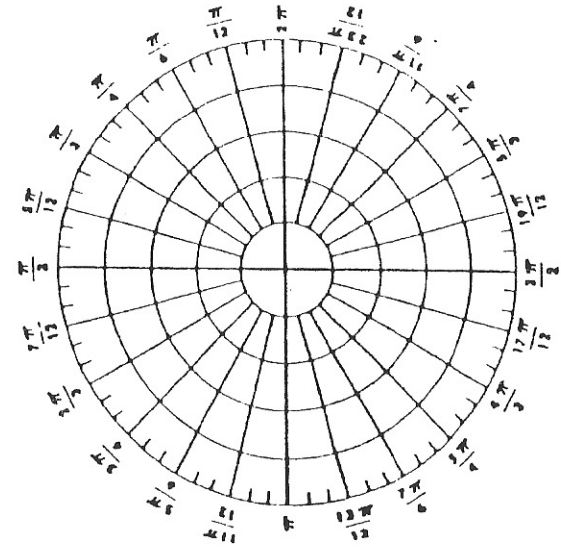
VII

A.



POLAR GRAPH STAMP
(degrees numbered)
No. 207015

B.



C.

