

Problem 1

a) Make a table of values for θ and $r(\theta) = 1 + \cos \theta$

b) Graph $r(\theta)$

c) What happens if we graph $r(\theta) = 1 + \cos 2\theta$?

Problem 2:

a) Look at the curve $r(\theta) = 2 \sin 4\theta$. What values can r take on? What values of θ make $r=0$?

b) Graph $r(\theta)$. What symmetries does the graph have? How can these symmetries be useful?

c) When do $r(\theta)$ and the circle of radius 1 have common points?

Problem 3:

a) Look at $x = \frac{1}{\sin t}$, $y = \frac{1}{\sin^2 t}$ where $0 < t < \pi$. What values can x, y take on?

b) Make a table of values for t , x , and y .

Do you notice relationship between x and y ? Use this information to graph the curve.

c) How would things change if $\pi < t < 2\pi$?

d) How would things change if $x = \sin t$ and $y = \sin^2 t$