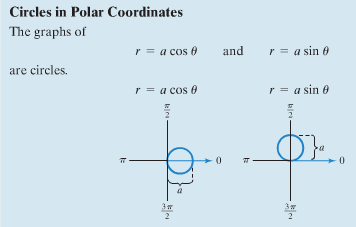
**Section 6.4** (Graphs of Polar Equations – OPTIONAL – No HW)

When plotting polar equations, we will typically utilize a polar grid. Just as with rectangular equations, we can use the point-plotting method to plot any polar equation

Example: See example 1 (pg. 675-6) and graph the equation r = 4 sin θ with θ in radians.

|  |  |
| --- | --- |
| θ | r = 4 sin θ |
| 0 |  |
| π/6 |  |
| π/3 |  |
| π/2 |  |
| 2π/3 |  |
| 5π/6 |  |
| π |  |

The graphs of r = a cos θ and r = a sin θ are circles (what produces a graph of a circle centered around the origin?)



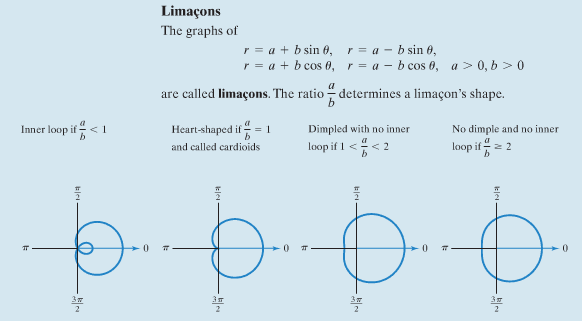
We can also use symmetry to graph polar equations more quickly

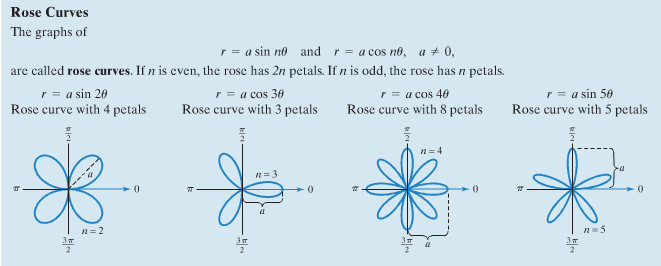
1. Replace θ with – θ: same eqn. => symmetric w/ polar (x) axis
2. Replace (r,θ) with (– r, – θ): same => symmetric w/ θ = π/2 (y)
3. Replace r with – r: same => symmetric w/ pole (origin)

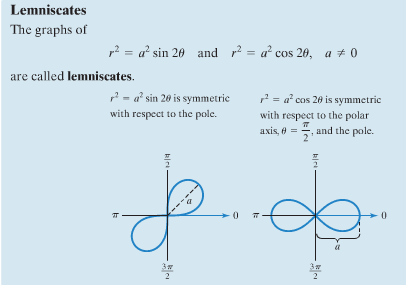
Example: Check for symmetry and graph the polar eqn. r = 1 + cos θ

Polar Axis (x) Line θ = π/2 (y) Pole (origin)

Below is a summary of some other types of graphs of polar equations (review in the book)…







Examples: Graph the following…

r = 1 – 2 sin θ

r = 3 cos 2θ

r2 = 4 cos 2θ

Example: Test for symmetry about the polar axis on r = 2 + cos θ

Symmetric Definitely not symmetric Maybe symmetric