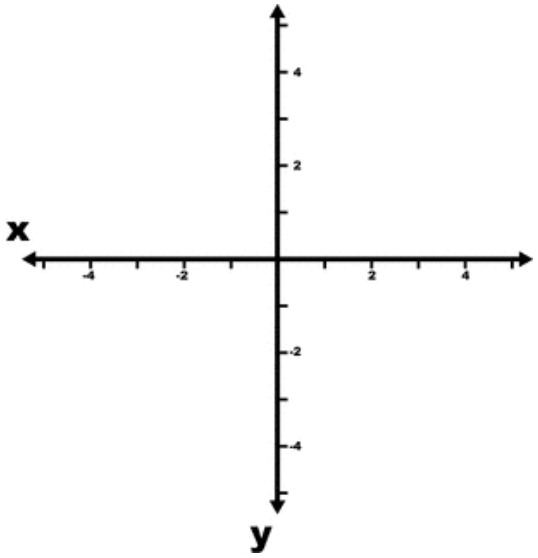
Unit #4: Parametric and Polar Equations
Topic: Finding Zeros and Maxima of Polar Graphs
Objective: SWBAT find the zeros and the maxima of a polar graph.

Warm Up #4:

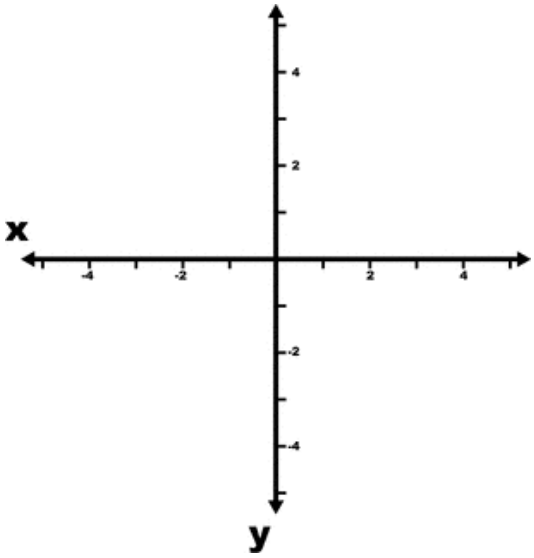
CALCULATOR ALLOWED

Graph each of the following polar equations:

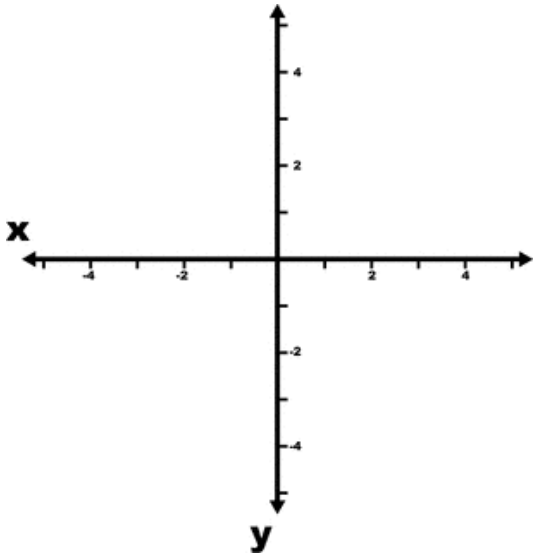
1) $r = 2cos\theta$



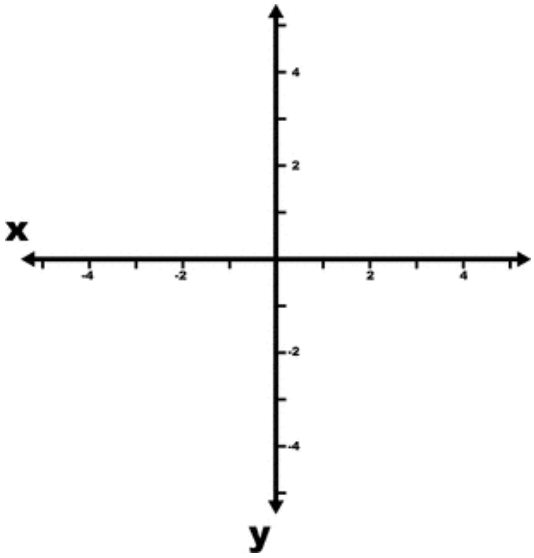
2) $r = 1 + 2sin\theta$



3) $r = 2 - 2sin\theta$



4) $r = 4cos(2\theta)$



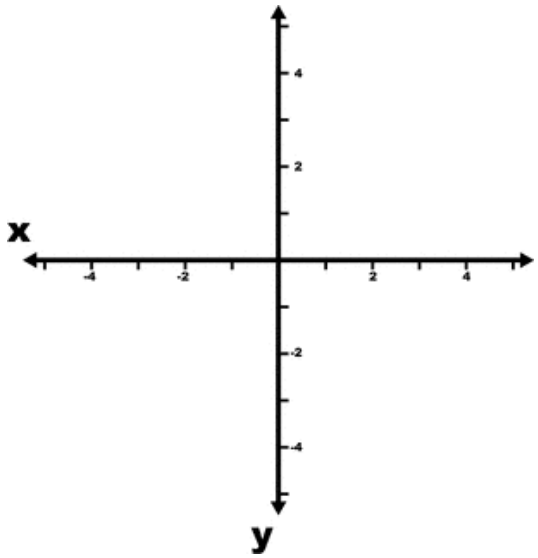
Finding Zeros and Maxima:

To graph in the rectangular coordinate system we construct a table of x and y values. To graph in the polar coordinate system we construct a table of θ and r values. We enter values of θ into a **polar equation** and calculate r.

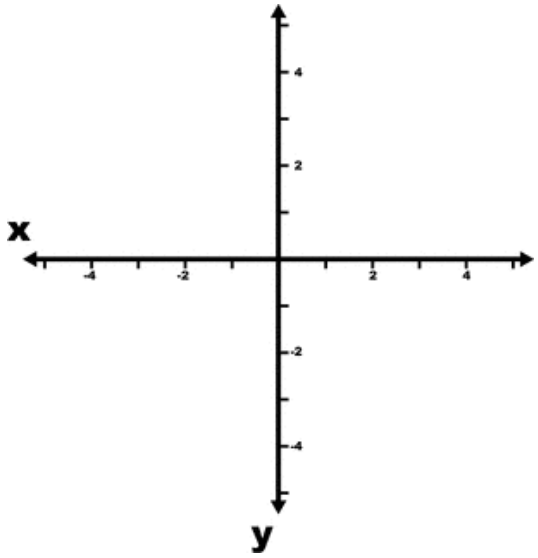
Two additional aids to sketching graphs of polar equations are . . .

knowing the θ-values for which | r | is maximum and knowing the θ-values for which r = 0.

Example #1: Find the maximum value and zeros of r for the graph of $r = 2 + 2cos\theta$, then sketch the graph.



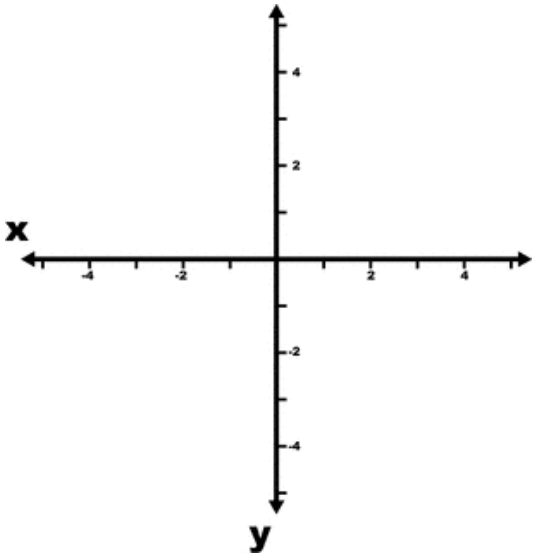
Example #2: Find the maximum value and zeros of r for the graph of $r = 5cos2\theta$, then sketch the graph.



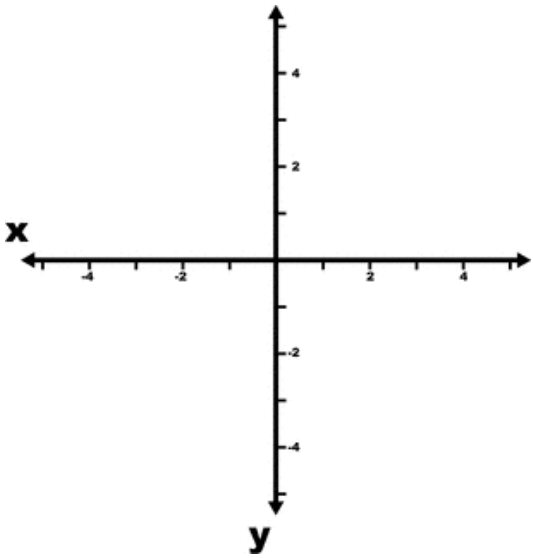
Assignment(s): Finish packet #1-8

Problem Set #4: Find the zeros and maxima points for each of the following.

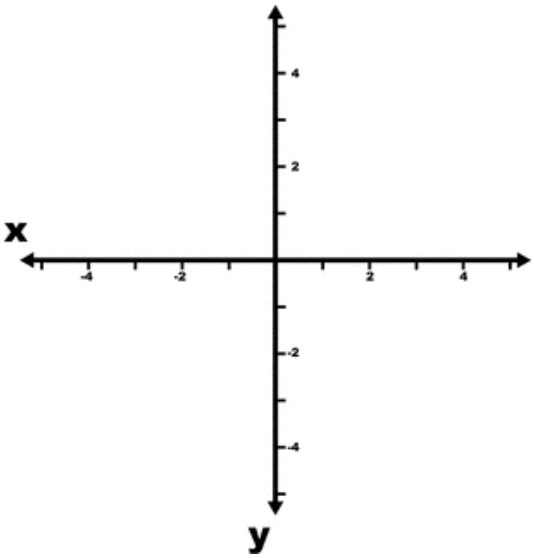
1) $r = 6 - 6sin4\theta$



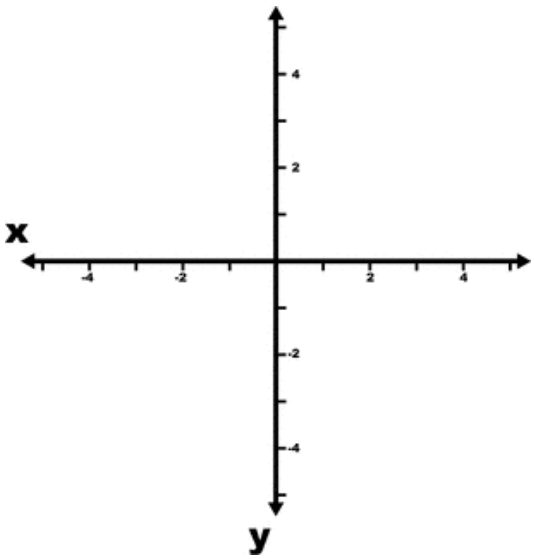
2) $2cos3\theta$



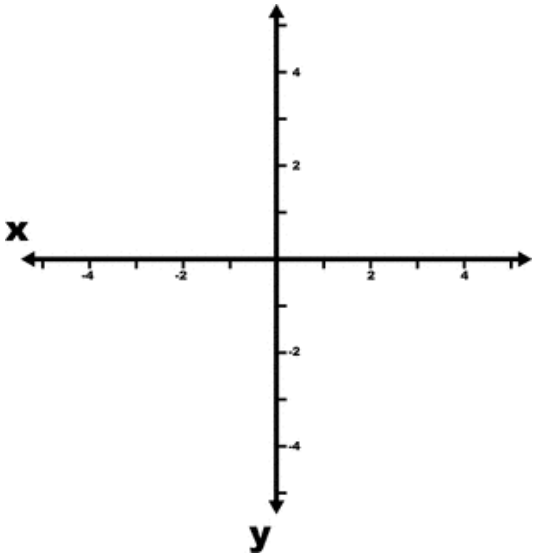
3) $r = 3 + 3sin\theta$



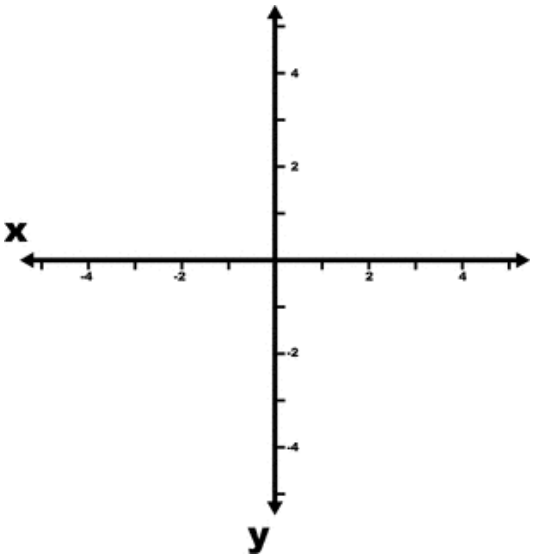
4) $r = 1 - 2cos\theta$



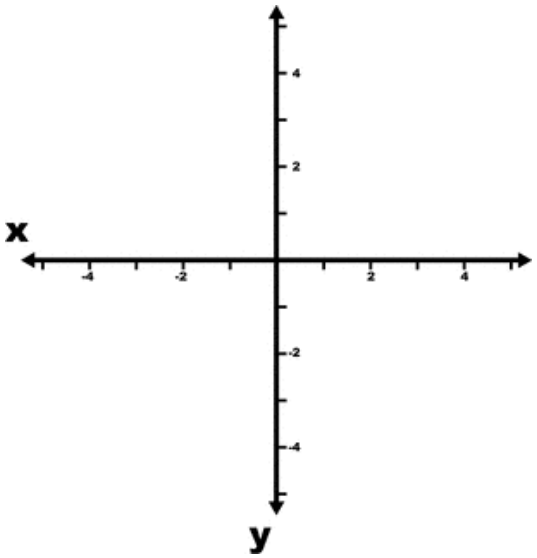
5) $r = 4 - 3sin\theta$



6) $r = 3(1 - cos\theta)$



7) $r = 3sin2\theta$



8) $r = 6 + 12cos\theta$