

Given  $\dot{r} = r (c + 2r^2 - r^4)$   
 $\dot{\theta} = 2\pi$

↓ Convert these equations into X-Y coordinate

with  $x = r \cos \theta$ ,  $y = r \sin \theta$

↪ run pplane7 to determine conditions on  $x(0)$  &  $y(0)$   
 so that the trajectory is a limit cycle  
b focus

Use  $c = -1, -0.5, 0$

(Note: in pplane7, be sure to select : options → solution direction  
 ↳ forward