

Name: \_\_\_\_\_

Section: \_\_\_\_\_

For the differential equation  $\frac{dy}{dx} = \cos(y)$ , inside the region  $-\pi < y < \pi$ ,

- a) Find the equilibrium points between  $-\pi$  and  $\pi$ .
- b) Draw the phase line and find the signs of  $y'$  and  $y''$  in each region. (The phase line should be restricted to  $-\pi < y < \pi$ .)
- c) Classify the equilibria as stable or unstable.
- d) Sketch the solution curves. Each region in the phase line should have a corresponding curve whose starting value for  $y$  is in that region. If a curve leaves the region  $-\pi < y < \pi$ , you can stop sketching it at the point where it leaves.