

Problem 5

Problems 1 through 6 involve equations of the form $dy/dt = f(y)$. In each problem sketch the graph of $f(y)$ versus y , determine the critical (equilibrium) points, and classify each one as asymptotically stable or unstable. Draw the phase line, and sketch several graphs of solutions in the ty -plane.

$$dy/dt = e^{-y} - 1, \quad -\infty < y_0 < \infty$$