Autonomous Equations (2.5)

1. Find and classify all equilibrium points, draw a phase line, sketch solutions in the $yt$-plane, and determine whether each equilibrium point is stable, semistable, or unstable.
   
   a. $y' = y^2(1 - y)$

   b. $y' = y \ln \left( y^2 + \frac{3}{4} \right)$
2. Solve the Gompertz equation: \( \frac{dy}{dt} = ry \ln \left( \frac{K}{y} \right) \)

(\textit{note:} The Gompertz curve fits both mortality and cancer rates well as we age)