Second Order Linear Equations (4.3)

For each of the following equations,

- find general solutions;

- solve the initial value problem with initial condition $y(0) = -1, y'(0) = 2$;

- sketch the phase portrait, identify the type of each equilibrium, and determine the stability of each equilibrium.

1. $2y'' - 3y' = 0$.

2. $y'' - 2y' + 5y = 0$.

3. $9y'' + 6y' + y = 0$.