Quiz 5, March 14, 2017, 11:40 class

State the Existence and Uniqueness Theorem for second order linear Differential Equations.

Answer: Consider the Initial Value Problem

$$y'' + P_1(x)y' + P_2(x)y = Q(x), \quad y(x_0) = y_0, \quad y'(x_0) = y_1.$$

If P_1, P_2, and Q are continuous on some open interval I which contains x_0, then the Initial Value Problem has a unique solution which is defined on all of I.