

General solution of second order linear homogeneous:

If y_1 and y_2 are linearly independent solutions of
$$y'' + p(x)y' + q(x)y = 0$$

Then the general solution of this equation is
$$y(x) = C_1 y_1(x) + C_2 y_2(x)$$

That is to say, every solution is of this form,
and you can solve any initial value problem by
picking particular values for the constants C_1 and C_2 .