

Quiz 11

MA 262
Artur's Class

2014/11/13

Problem 1

Consider the following inhomogenous equations.

$$(a) \quad y''' + 7y' + y = 4e^{at}$$

$$(b) \quad y'' - 6y' + 0.5y = \cos \omega x.$$

Do not solve them! Instead, tell me what trial solutions you would use.

Solution

(a) Trial solution: $y_p(t) = Ae^{at}$

(b) Trial solution: $y_p(x) = A \cos \omega x + B \sin \omega x$

Remark

Plug the trial solution y_p into the original differential equation to solve for the constants A and B above.

Problem 2

What is a Green's function for? Just one or two sentences is fine. But be precise. (I don't care about the exact formula, but maybe tell me what data is used to construct it?)

Solution

Green's functions are used to find a particular solutions y_p of a second order linear differential equation $L[y] = F$. It requires knowledge of two linearly independent solutions y_1, y_2 to the homogeneous equation $L[y] = 0$.