

Ma 221

Find a particular solution of:

$$y'' - 10y' + 34y = 12e^{2x} \quad (1)$$

(We can apply the method of undetermined coefficients.)

The particular solution is of the form

$y_p = Ae^{2x}$ where A is yet to be determined.

$$y'_p = 2Ae^{2x} \quad y''_p = 4Ae^{2x}$$

Substitute back into the DE:

$$4Ae^{2x} - 10(2Ae^{2x}) + 34(Ae^{2x}) = 12e^{2x} \quad (2)$$

Which implies $A = \frac{2}{3}$

Therefore $y_p = \frac{2}{3}e^{2x} \quad (3)$