

Quiz 6 MTH 335 Fall 2025

Saturday, September 13, 2025

10:53 AM

Find gen soln of

$$y'' - 6y' + 8y = 0$$

Soln: Guess soln takes form $y(t) = e^{rt}$ for some unknown r .

Then $y'(t) = re^{rt}$ and $y''(t) = r^2e^{rt}$.

Substitution into the DDE gives

$$r^2e^{rt} - 6re^{rt} + 8e^{rt} = 0$$

Since $e^{rt} \neq 0$ for all t , divide by it to get

$$r^2 - 6r + 8 = 0$$

$$(r-4)(r-2) = 0$$

↓

$$r = 4, 2$$

Therefore, the general soln is

$$y(t) = c_1e^{4t} + c_2e^{2t}$$