

Quiz 1 Solutions

Find K so that $y = e^{Kx}$ solves

$$y''' - 3y'' + 2y' = 0$$

Solution

$$y = e^{Kx}$$

$$y' = Ke^{Kx}$$

$$y'' = K^2 e^{Kx}$$

$$y''' = K^3 e^{Kx}$$

$$\Rightarrow 0 = y''' - 3y'' + 2y' = e^{Kx} \cdot (K^3 - 3K^2 + 2K)$$

$$K^3 - 3K^2 + 2K = 0$$

$$K(K-2)(K-1) = 0$$

$$K = 0, 2, 1$$