

Page _____

$$(D^2 - 3D + 2) y = x^2 + 2x + 1$$

A.E

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

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

$$m = 1, 2$$

$$\text{Cof} = c_1 e^x + c_2 e^{2x}$$

P.I.

$$\frac{1}{D^2 - 3D + 2} (x^2 + 2x + 1)$$

$$\frac{1}{2} \left[1 + \frac{D^2 - 3D}{2} \right]^{-1} (x^2 + 2x + 1)$$

$$\frac{1}{2} \left[1 - \frac{D^2 - 3D}{2} + \left(\frac{D^2 - 3D}{2} \right)^2 - \dots \right] (x^2 + 2x + 1)$$

$$\frac{1}{2} \left[1 - \frac{D^2}{2} + \frac{3D}{2} + \frac{9D^2}{4} \right] (x^2 + 2x + 1)$$

$$\frac{1}{2} \left[x^2 + 2x + 1 - \frac{2}{2} + \frac{3}{2} (2x + 2) + \frac{9}{4} x^2 \right]$$

$$\frac{1}{2} \left[x^2 + 2x + 3x + 3 + \frac{9}{4} \right]$$

$$\frac{1}{2} \left[x^2 + 5x + \frac{15}{2} \right]$$

$$y = \text{Cof} + \text{P.I.}$$

$$= c_1 e^x + c_2 e^{2x} + \frac{1}{2} \left[x^2 + 5x + \frac{15}{2} \right]$$