



③ $(D^5 - D)y = 0$

Solⁿ

Auxiliary eqⁿ $\rightarrow (m^5 - m) = 0$

~~$m^5 - m = 0$~~
 ~~$m(m^4 - 1) = 0$~~
 ~~$m(m^2 - 1)(m^2 + 1) = 0$~~
 ~~$m(m-1)(m+1)(m^2 + 1) = 0$~~

$\Rightarrow m^4 - 1 = 0$

$m = -1, 1, i, -i$

$y = (C_1 + C_2x + C_3x^2 + C_4x^3)e^x$

$\frac{1}{D^5 - D}$

\Rightarrow ~~$(C_1 + C_2x + C_3x^2 + C_4x^3)e^x$~~



$$\frac{D^5 + D}{(D^5 - D)(D^5 + D)}$$

$$\rightarrow \frac{D^5 + D}{D^{10} - D^6 + D^6 - D^2}$$

$$\frac{D^5 + D}{D^2} \rightarrow \frac{\cancel{D}^2 (D^4 + \cancel{D})}{\cancel{D}^2}$$

$$\rightarrow \frac{D^4 + 1}{D^2} \quad \underline{\underline{18}}$$