Class 3 - Particular Integral of Standard Functions- Type-1

Solve the following Linear Differential Equations :

1. $(D^2-5D+6)\ y\ =\ e^{4x}$

Answer : $y = ae^{2x} + be^{3x} + \frac{e^{4x}}{2}$

2. $(D^2 + 4D + 5)y = -2\cosh x$. Also find y when y = 0, dy/dx = 1 at x = 0.

Answer : $y = \frac{3}{5}\ e^{-2x}\ (\cos x + 3\sin x) - \frac{e^x}{10} - \frac{e^{-x}}{2}$

3. $(D^3 + 2D^2 + D)y = e^{-x}$

Answer : $y = c_1 + (c_2 + c_3\ x)\ e^{-x} - \frac{x^2e^{-x}}{2}$

4. $(D^2 + 4D + 13)\ y = 2\ e^{-x}$ given y (0) = 0 and y ' (0) = -1.

Answer : $y = \frac{-1}{5}e^{-2x}\ (\cos 3x + 2\sin 3x) + \frac{e^{-x}}{5}$

5. $(D^2 - 7D + 10)y = (1+e^x)^2$

Answer : $y = ae^{2x} + b\ e^{-5x} + \frac{1}{10} + \frac{1}{2}e^x - \frac{x}{3}\ e^{2x}$

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