Class 5 - Particular Integral of Standard Functions- Type-3

Solve the following Linear Differential Equations:

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

Answer : $y = ae^{-x} + be^{-2x} + \frac{1}{2}(x^2 - 3x + \frac{7}{2})$

2. $(D^2 + 4D + 4)y = x^3.$

Answer : $y = (a + bx)e^{-2x} + \frac{x^3}{4} - \frac{3x^2}{4} + \frac{9x}{8} - \frac{3}{4}$

3. $(D^2 + 3D + 2)y = 3x + 4.$

Answer : $y = ae^{-x} + be^{-2x} + \frac{6x-1}{4}$

4. $(D^3 - 6D^2 + 5D)y = 5 + x^2$

Answer : $y = c_1 + c_2e^x + c_3e^{5x} + \frac{1}{1875}(125x^3 + 450x^2 + 930x + 936)$

5. $(D^2 + 1)y = e^x + x^4.$

Answer : $y = a\cos x + b\sin x + \frac{1}{2}e^x + x^4 - 12x^2 + 24$

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