Class 4 - Particular Integral of Standard Functions- Type-2

Solve the following Linear Differential Equations :

1. $(D^2 - 5D + 6)\ y = e^{3x} + \sin(2x + 1)$

Answer : $y = ae^{2x} + be^{3x} + xe^{3x} + \frac{2\sin(2x+1) + 10\cos(2x+1)}{104}$

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

Answer : $y = ae^{-x} + be^{-2x} + 1 + \frac{3\sin 2x - \cos 2x}{10}$

3. $(D^2 - 4D + 3)y = \sin 3x \cos 2x.$

Answer : $y = ae^{x} + be^{3x} + \frac{10\cos 5x - 11\sin 5x}{884} + \frac{\sin x + 2\cos x}{20}$

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

Answer : $y = c_1 + (c_2 + c_3 x)e^{-x} - \frac{x^2 e^{-x}}{2} + \frac{3\cos 2x - 4\sin 2x}{50}$

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

Answer : $y = (c_1 + c_2 x)e^{-x} + \frac{e^{2x}}{9} - \frac{1}{2} + \frac{3\cos 2x - 4\sin 2x}{50}$

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