Exercises on Differential Equations

1 Find the general solution for the following Differential Equations:-

1. $y''' - 6y'' + 11y' - 6y = e^{4x}$
2. $y''' - 4y'' + y' + 6y = x^3 + 2$
3. $y^{(4)} - y = \cos 2x$
4. $y'''' - 4m^4 y = \sinh x$
5. $y''' - 8y = \sin 3x$
6. $y'' + 4y' + 13y = 3e^{3x}$
7. $y'' - 4y' + 5y = 2e^{-2x}$
8. $y^{(4)} - 8y'' + 16y = \cosh 3x$
9. $y^{(4)} + 4y = \sin 3x$
10. $y''' + y = \cos 2x$

2 Note

$$\sqrt{i} = \pm\frac{1}{\sqrt{2}}(1+i)$$