Linear Diffusion Equations

- **Diffusion Equation** $\dfrac{\partial w}{\partial t} = a\dfrac{\partial^2 w}{\partial x^2}$
- **Nonhomogeneous Diffusion Equation** $\dfrac{\partial w}{\partial t} = a\dfrac{\partial^2 w}{\partial x^2} + \Phi(x,t)$
- **Convective Diffusion Equation with a Source** $\dfrac{\partial w}{\partial t} = a\dfrac{\partial^2 w}{\partial x^2} + b\dfrac{\partial w}{\partial x} + cw + \Phi(x,t)$
- **Diffusion Equation with Axial Symmetry** $\dfrac{\partial w}{\partial t} = a\left(\dfrac{\partial^2 w}{\partial r^2} + \dfrac{1}{r}\dfrac{\partial w}{\partial r}\right)$
- **Diffusion Equation of the Form** $\dfrac{\partial w}{\partial t} = a\left(\dfrac{\partial^2 w}{\partial r^2} + \dfrac{1}{r}\dfrac{\partial w}{\partial r}\right) + \Phi(r,t)$
- **Diffusion Equation with Central Symmetry** $\dfrac{\partial w}{\partial t} = a\left(\dfrac{\partial^2 w}{\partial r^2} + \dfrac{2}{r}\dfrac{\partial w}{\partial r}\right)$
- **Diffusion Equation of the Form** $\dfrac{\partial w}{\partial t} = a\left(\dfrac{\partial^2 w}{\partial r^2} + \dfrac{2}{r}\dfrac{\partial w}{\partial r}\right) + \Phi(r,t)$

