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# Unsteady Temperature Distribution in a Finite Functionally Graded Cylinder

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**Abstract :** In the current study, two-dimensional unsteady heat conduction in a functionally graded cylinder is studied analytically. The temperature distribution is in radial and longitudinal directions. Heat conduction coefficients are considered a power function of radius both in radial and longitudinal directions. The proposed solution can exactly satisfy the boundary conditions. Analytical unsteady temperature distribution for different parameters of functionally graded cylinder is investigated. The achieved exact solution is useful for thermal stress analysis of functionally graded cylinders. Regarding the analytical approach, this solution can be used to understand the concepts of heat conduction in functionally graded materials.

**Keywords :** functionally graded materials, unsteady heat conduction, cylinder, temperature distribution
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