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STEADY-STATE TEMPERATURE ANALYSIS TO 2D ELASTICITY AND THERMO-ELASTICITY PROBLEMS FOR INHOMOGENEOUS SOLIDS IN HALF-PLANE

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Abstract

The concept of temperature distribution in inhomogeneous semi-infinite solids is examined by making use of direct integration method. The analysis is done on the solution of the in-plane steady state heat conduction problem under certain boundary conditions. The method of direct integration has been employed, which is then reduced to Volterra integral equation of second kind, produces the explicit form analytical solution. Using resolvent- kernel algorithm, the governing equation is solved to get present solution. The temperature distribution obtained and calculated numerically and the relation with distribution of heat flux generated by internal heat source is shown graphically.

Keywords

2D elasticity and thermoelasticity problems; direct integration method; inhomogeneous solid; half-plane; Volterra integral equation

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