Effect of a 2D Axisymmetric Cylindrical Heat Source on a Thermoelastic Thick Plate

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Abstract

We consider a 2-D study of a plate with finite thickness and infinite extent. The upper plate surface is considered traction free and subjected to an axisymmetric heating. The lower surface is thermally insulated and layed on a rigid foundation. A cylindrical heat source affects the plate. This problem is relevant to the generalized thermoelasticity theory with one relaxation time. Laplace and Hankel transforms are considered. We use Inverse Hankel and Laplace transforms numerically. All related functions are showed graphically.

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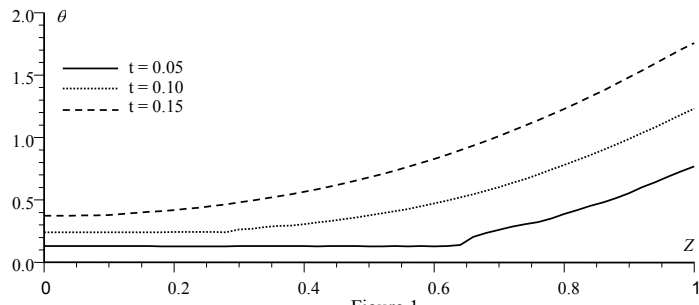
Figure 1
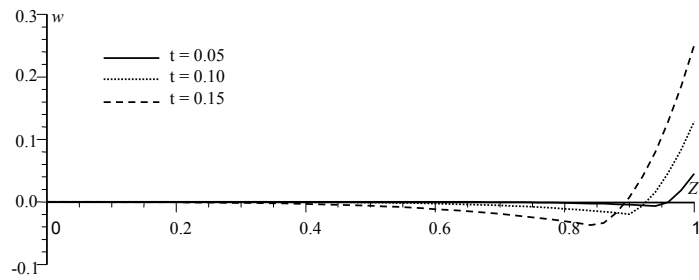Temperature distribution along the axis of the cylinder ($r = 0$)

Figure 2
Axial displacement distribution along the axis of the cylinder ($r = 0$)

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