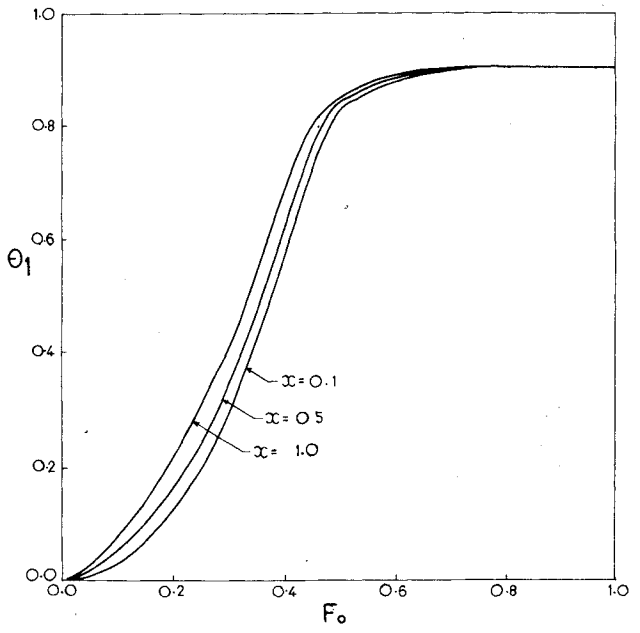

Fig. 2 Temperature profile in metal skin (θ_1 vs Fo_3).

Figure 2 shows the build up of temperature profile in the metal skin at different points (for $x=0.1$, 0.5, 1.0). For $Fo<0.4$, there is a sharp variation in θ_1 and afterwards it establishes a thermodynamic equilibrium in the metal skin and the coating material.

Conclusion

The effectiveness of the method proposed by Ivanov and Medvedev dealing with complex problems are shown. Analytical solutions for the temperature histories in the metal skin and the protective coating are determined and it has been observed that coatings subjected to radiative and convective heating can withstand fairly well in a steady state. This analysis may help designers to select proper coating materials and suitable boundary conditions to keep the payload compartment below a design temperature level.

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