

Boundary value problems of elasticity for semi-ellipse with non-homogeneous boundary conditions at the segment between focuses

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The work considers boundary value problems of elasticity for semi-ellipse, when boundary conditions at the portion of the linear boundary between the focuses are nonzero and outside the focuses are zero. Thus, the continuity conditions for the problem solution are given at the portion of the linear boundary, therefore it is possible to bind the semi-ellipse as a whole ellipse, in which on the section between the focuses the condition of uninterrupted continuation of the problem solution not performed along this part, i.e. we have a crack on which, for example, the tangential stress acts. The problem solution for the cracked ellipse is reduced to the solution of the internal and external problems of elasticity, which are solved quite simply by the method of separation of variables.