

Construction of unknown full-strength contours for the problem of plane elasticity theory

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Abstract

The problem of the plane theory of elasticity for a plate with a partially unknown boundary is considered. Absolutely smooth rigid punches with rectilinear bases, which are under the action of the forces that apply to their middle points. Unknown part of the boundary is free from external forces.

Using the methods of complex analysis [1], the unknown part of the boundary is found under the condition that the tangential normal stress on that takes a constant value. Numerical analysis is performed and the corresponding graphs are constructed by Mathcad.

References

1.Muskhelishvili, N.: Some Basic Problems of the Mathematical Theory of Elasticity. Fundamental Equations, Plane Theory of Elasticity, Torsion and Bending, XXXI. Noordhoff International Publishing, Leyden, (1975).