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Reconstructing free surfaces for a flow of ideal fluid around supercavitating wedges.

The problem of one or two supercavitating wedges in the jet of the ideal fluid is solved in the closed form. Tulin-Terent'ev single-spiral-vortex model is assumed for the closure of the cavities. Using conformal map from the parametric complex plane onto the flow domain the problem is reduced to two Riemann-Hilbert boundary value problems on the hyperelliptic Riemann surface. The nonlinear system for the accessory parameters of the conformal map is solved numerically. The shape of the cavity and the free boundary is reconstructed for a supercavitating wedge under free surface. (Received August 21, 2008)