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Quasi-homogeneous solutions to the WDVV equations associated with the genus one Hurwitz-Frobenius manifolds.

We consider the genus one Hurwitz space of ramified coverings of the Riemann sphere with prescribed ramification profile over the point at infinity. We construct on Hurwitz spaces a family of Frobenius manifold structures associated with the quasi-homogeneous differentials. We explicitly derive new generating formulas for the corresponding prepotentials. This produces quasi-homogeneous solutions to the following generalized WDVV associativity equations: $F_i\eta^{-1}F_j = F_j\eta^{-1}F_i$, where the invertible constant matrix η is a linear combination of the matrices F_j. As applications, we obtain explicit solutions to the WDVV equations in genus one and give a new proof of Ramanujan's differential equations for the Eisenstein series E_2, E_4 and E_6.