

HW 2 (20 points) - To be handed by Thursday, Aug
29 in the class or by email

1. (10 points) Let $C \subset \mathbb{H}^2$ be an embedded submanifold in the (strictly) upper half-plane. Consider a surface of revolution $S_C = \{(x, y, z) | (\sqrt{x^2 + y^2}, z) \in C\}$ and the induced metric on it. Prove that it is a warped product.
2. (10 points) Suppose (M, g) and (N, h) are compact connected oriented Riemannian manifolds such that (N, h) is a k -sheeted smooth Riemannian cover of (M, g) . Prove that $Vol(N) = kVol(M)$.