

MA 314 Homework 20:

1. MORTAR

- (1) Read Bonahon Sections 8.1 - 8.3
- (2) Read problems 8.5 and 8.6 (pages 224 - 225) and try your hand at proving them.

2. BRICKS

- (1) Let $X = \mathbb{R}^2 - \{0\}$ and let Γ be the group of diffeomorphisms of X generated by $\gamma(x, y) = (2x, y/2)$. (That is, Γ consists of all functions obtained by composing γ with itself some finite number of times.)
 - (a) Show that Γ acts freely and discontinuously on X .
 - (b) Use a computer to draw the circle $x^2 + (y - 2)^2 = 1$ and the image of that circle under γ and γ^2 .
 - (c) Show that the quotient pseudo-metric \bar{d} on X/Γ is not a metric.