

# Title

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Tuesday 29<sup>th</sup> September, 2020

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**Exercise 1.1** (?).

Show that the 3 natural coordinate charts on  $\mathbb{CP}^2$  given by e.g.  $\varphi_{U_0}([z_0 : z_1 : z_2]) = \left[ \frac{z_1}{z_0}, \frac{z_2}{z_0} \right]$  yield a smooth atlas.

**Exercise 1.2** (?).

Consider the map

$$\pi : \mathbb{CP}^2 \rightarrow \mathbb{R}^2$$
$$[z_0 : z_1 : z_2] \mapsto \left[ \frac{|z_1|^2}{|z_0|^2 + |z_1|^2 + |z_2|^2}, \frac{|z_2|^2}{|z_0|^2 + |z_1|^2 + |z_2|^2} \right].$$

Show that  $\pi$  is smooth and  $\text{im}\pi = \{p_1, p_2 \geq 0, p_1 + p_2 \leq 1\}$ .