

Exercises from conversions from horizontal to vertical representation of fuzzy sets.

**Exercise 2.1** (“satisfaction with the grades”; old scale) *Fuzzy set  $A$  is given by its collection of cuts:*

$$\mathcal{R}_A(\alpha) = \begin{cases} \{1, 2, 3, 4\}, & \alpha = 0, \\ \{1, 2, 3\}, & \alpha \in (0, 0.2], \\ \{1, 2\}, & \alpha \in (0.2, 0.7], \\ \{1\}, & \alpha \in (0.7, 1]. \end{cases}$$

*Find its vertical representation.*

**Exercise 2.2** *Fuzzy set  $B$  is given by its collection of cuts:*

$$\mathcal{R}_B(\alpha) = \begin{cases} \mathbb{R}, & \alpha = 0, \\ [3\alpha, 6 - \alpha], & \alpha \in (0, 1]. \end{cases}$$

*Find its vertical representation.*