Fuzzy intersections

Exercise 4.1
Fuzzy sets A, B have the following horizontal representations:

$$\mathcal{R}_A(\alpha) = \begin{cases} \mathbb{R}\,, & \alpha = 0\,, \\ [1 + 2\,\alpha, 8 - 2\,\alpha]\,, & \alpha \in (0, 1]\,, \end{cases}$$
$$\mathcal{R}_B(\alpha) = \begin{cases} \mathbb{R}\,, & \alpha = 0\,, \\ [2 + 3\,\alpha, 8 - 2\,\alpha]\,, & \alpha \in (0, 1]\,. \end{cases}$$

Find the standard, product, and Łukasiewicz intersections of A and B.