$$\sqrt{a} \cdot B \geq 0 \iff \left[\begin{array}{l} \begin{cases} B \geq 0 \\ \sqrt{a} \geq 0 \end{cases} \\ \begin{cases} B \leq 0 \\ \sqrt{a} \leq 0 \end{cases} \end{array}\right.$$

$$\sqrt{a} \cdot B \leq 0 \iff \left[\begin{array}{l} \begin{cases} B \leq 0 \\ \sqrt{a} \geq 0 \end{cases} \\ \begin{cases} B \geq 0 \\ \sqrt{a} \leq 0 \end{cases} \end{array}\right.$$