

$$\mathcal{P}(A) = \{\emptyset, \{(a, \{a\})\}, \{\{a, \{a\}\}\}, \{(a, \{a\}), \{a, \{a\}\}\}\}$$

$$A \times \mathcal{P}(A) = \{((a, \{a\}), \emptyset), ((a, \{a\}), \{(a, \{a\})\}), ((a, \{a\}), \{\{a, \{a\}\}\}), ((a, \{a\}), \{(a, \{a\}), \{a, \{a\}\}\}), \\ (\{a, \{a\}\}, \emptyset), (\{a, \{a\}\}, \{(a, \{a\})\}), (\{a, \{a\}\}, \{\{a, \{a\}\}\}), (\{a, \{a\}\}, \{(a, \{a\}), \{a, \{a\}\}\})\}$$