Definition 1.52 specifies that R is a regular expression if R is

1. a for some a in the alphabet Σ
2. ϵ
3. $\{\}$
4. $(R_1 \cup R_2)$ where R_1 and R_2 are regular expressions
5. $(R_1 \circ R_2)$ where R_1 and R_2 are regular expressions
6. R_1^* where R_1 is a regular expression

Consider *regular+ expressions* which extend the above definition with two additional cases

1. $R_1?$ where R_1 is a regular expression
2. R_1^k where R_1 is a regular expression and k is an integer

Where ? means 0 or 1 instance of the previous regular expression. Show that regular+ expressions describe the class of regular languages.