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Homework 01

1.

- $\emptyset - empty\ language\ that\ doesn't\ contain\ any\ word$
  $This\ is\ not\ neutral\ but\ zero\ of\ concatenation\ of\ languages: \emptyset A = A\,\emptyset = \emptyset$
- $\{\varepsilon\} - a\ language\ that\ contains\ only\ 1\ word\ which\ is\ an\ 'empty'\ one.$
  $This\ is\ a\ neutral\ element\ of\ concatenation\ of\ languages: \{\varepsilon\}A = A\,\{\varepsilon\} = A$

2. $The\ prefixes, that\ at\ the\ same\ time\ are\ suffixes\ for\ "bbabbbaabbab"\ are: \{\varepsilon, b, bbab, bbabbbaabbab\}$

3. $\{ab, abb, bab\}\{ab, bab\} = \{abab, abbab, abbbab, babab, babbab\}$

4. $\{a, ab, ba, bbb, baba\}\backslash\{a\}^*\{b\}^* = \{a, ab, ba, bbb, baba\}\backslash\{a, b, ab, aa, bb, aab, abb, aabb, aaa, bbb, \dots\} = \{ba, baba\}$

5. $\{a\}^*\{b\}^+\{a\}^* \cap \{a, ab, abba, baba\} = \{ab, aba, b, ba, abb, abba, bb, bba, \dots\} \cap \{a, ab, abba, baba\} = \{ab, abba\}$

6. $A\ relation\ \{(a,b),(a,c),(b,d),(c,d),(d,e),(d,f),(e,f)\}\ defined\ over\ the\ set\ \{a,b,c,d,e,f\}$
$reflexive - transitive\ closure:$
$\{(a,a),(a,b),(a,c),(a,d),(a,e),(a,f),(b,b),(b,c),(b,d),(b,e),(b,f),(c,c),(c,d),(c,e),(c,f),(d,d),(d,e),(d,f),(e,e),(e,f),(f,f)\}$
$The\ obtained\ relation\ is\ not\ equivalence\ since\ it's\ not\ symetric.$