Example :-

$$\Sigma = \{a, b\} \qquad aa^* = a^+$$

i. $a/b = \{a, b\}$

ii. $a(a/b) = \{aa, ab\}$

$b^* =$

iii. $a^* = \{\epsilon, a, aa, aaa, aaaa, \ldots\} \cdot \{\epsilon, b, bb, bbb, \ldots\}$

iv. $a^+ = \{a, aa, aaa, aaaa, \ldots\}$

v. $\boxed{a^* b^*} = \{\epsilon, a, aa, aaa, b, bb, bbb, bbbb, ab, aaab, aabbb, aaabbbb, \ldots\} \quad]\to a^* b^*$

vi. $a^* b^+ = \{b, ab, aab, aaab, bb, bbbb, aabbb, aaabb, \ldots\} \quad \to a^* b^+$

vii. $a^+ b^* = \{a, aaa, aaaa, ab, abbb, aaabbbb, \ldots\}$

viii. $(ab)^* = \{\epsilon, ab, abab, ababab ab, \ldots\}$

ix. $(a/b)^* = \{\epsilon, a, aa, aaa, b, bb, ab, aab, aaabb, aba, baababa, \ldots\} \quad bbaaa$

x. $a^*/b^* = \{\epsilon, a, aa, aaa, b, bb, bbbb, \ldots\}$

$l(l/d)^*, \qquad l^+ d^*$

$a, aa, aaa \longrightarrow \boxed{(ab)^2 = a^2 b^2}, \boxed{(ab)^* \neq a^* b^*}$

$\boxed{A \times B \neq B \times A}$

$\boxed{ab = ba}$

$(AB)^{-1} = B^{-1} A^{-1}$

$(abc)^{-1} \neq a^{-1} b^{-1} c^{-1}$
$\longrightarrow c^{-1} b^{-1} a^{-1}$

$\vec{a} \cdot \vec{b} = \vec{b} \cdot \vec{a}$

$\vec{a} \times \vec{b} \neq \vec{b} \times \vec{a}$

xi. $a^*(ab)^* = \{\epsilon, a, aaaa, ab, abab, ababab, aab, aaaaab, aaaabab, \ldots\}$

xii. $a^*(ab)^* b^+ = \{b, bb, bbbb, abb, ababab, aabb, aaaabb, aaaaababbbb, \ldots\} \quad aaaaab, \ldots$

$\{\epsilon, a, aa, aaa, \ldots\} \cdot \{\epsilon, ab, abab, ababab, \ldots\}$

xiii. $(a^* ba)/(ab^* a) = \{ba, aa, aba, aaaaba, abbbbba, \ldots\}$

$\{aa, aba, abbbbba, \ldots\}$

$\{ba, aba, aaaaaba, \ldots\}$

$\downarrow$ ＊ $\{aa, aba, abbbba, \ldots \}$ ）

$\{ba, aba, aaaaaba, \ldots \}$

xiv. $a^* (ba/ab^*) a = \{ \widehat{bad}, a\widehat{a}, ab\widehat{a}, \widehat{a}ba\widehat{a}, \widehat{a}a\widehat{a},$
$\widehat{a}ab\widehat{a}, \widehat{aaaa}\,abbbb\,b\widehat{a}, \ldots \}$
$abbbbb\,b\widehat{a}$

xv. $(a/b)^* (b(a)^* = \{ \epsilon, a, b, aaa, bbbb, abbabaabb, \ldots \}$
$\longrightarrow (a/b)^* = (b/a)^*$