1. Use closure under intersection to prove that the language

\[ A = \{0^n1^n2^m \mid m, n \geq 0\} \]

is not regular.

2. Exercise 1.17(c).

3. Problem 1.23(c).

4. Prove that \( L = \{a^mb^n \mid m \text{ is a multiple of } n\} \) is not regular.