

Solutions to selected exercises from §3.1

Question 8

Suppose that Q can be obtained from P from a series of elementary row operations. Then, there exists elementary matrices E_1, \dots, E_ℓ such that

$$Q = E_\ell \cdots E_2 E_1 P. \quad (1)$$

We showed in class that for every elementary row operation with representing matrix E , its inverse E^{-1} corresponds to an elementary row operation of the same type. Since

$$P = E_1^{-1} E_2^{-1} \cdots E_\ell^{-1} Q \quad (2)$$

this shows that P can be obtained from Q by performing the same type of operations.