exercise 1:
Let \{e_1, ..., e_n\} be the natural basis for \(\mathbb{R}^n\) and for \(i\) and \(j\) in \(\{1, ..., n\}\) define the \(n\) by \(n\) matrix \(E_{ij}\) by the following:
the \(ij\) entry of \(E_{ij}\) is 1, all the other entries are zero.
(i). Evaluate \(E_{ij}e_k\), where \(i, j, k\) are in \(\{1, ..., n\}\).
(ii). Evaluate \(E_{ij}E_{kl}\), where \(i, j, k, l\) are in \(\{1, ..., n\}\).
**Hint:** For insight first cover the case \(n = 2\). Separate the cases \(j = k\) and \(j \neq k\).

exercise 2:
From your textbook: 2.3.9

exercise 3:
From your textbook: 2.3.12

exercise 4:
From your textbook: 2.4.2: a, b, c.

exercise 5:
From your textbook: 2.4.9