Exercise 1
Which of the following sets of vectors are linearly dependent?
(i) (1, 0), (−3, 0);
(ii) (0, −1), (0, −2), (1, 2);
(iii) (0, −1, 0), (0, 2, 0), (1, 2, 0);
(iv) (0, −1, 1), (1, 2, 0), (1, 1, 1);
(v) (0, 0, 0, 0), (1, 2, 1, 1).

Exercise 2
Which of the following sets of vectors are bases for the corresponding space $\mathbb{R}^n$? (The dimension $n$ should be clear from the length of vectors.)
(i) (1, 1);
(ii) (1, 0), (1, −1);
(iii) (2, −2), (−1, 1);
(iv) (−1, 1), (2, −2), (−1, −1);
(v) (1, 1, 0, 0), (0, 1, 2, 3), (4, 3, 2, 1);
(vi) (1, 0, −1), (0, −1, 0), (1, −2, −1).