experimental mathematics with MAPLE

Help with exercises for chapter 10

Exercise 10.2. Difficulties with this exercise will probably originate from lack of familiarity with pages 189-195 of the book.

Exercise 10.3. Structurally, this is the same computation of a recursive sequence you have seen many times. A small technical difficulty results from the usage `evalm`, as illustrated in the example at page 196.

Exercise 10.4.

(a) Be careful, this is non-commutative multiplication (lest the whole idea of commutator would be pointless).

(b) If your calculations are correct, these period are small.

Exercise 10.5.

(a) This is an example of the use of `map` with matrices.

(c) You will see that while some entries of M_t are fixed, others change with t, in a rather predictable manner.

(d) You must first construct an explicit function $t \mapsto M_t$, describing the conjectural form of the matrix.

(e) Perform the first couple of steps by hand.

Exercise 10.7. Which quantity associated with a matrix is relevant to the question of invertibility?