

Homework Assignment

Prepare a report on the following problem:

A material point is moving along a trajectory given by

$$x(t) = a(2 \cos t - \cos 2t),$$

$$y(t) = a(2 \sin t - \sin 2t),$$

where the trajectory parameter changes in the range $t \in [0, 2\pi]$ and the constant $a = 4$.

Find:

- The trajectory shape.
- The velocity vectors at $N = 5$ points distributed in equal intervals in the range of parameter t .
- The point speed (velocity magnitude) as a function of the parameter t treated as time.

The report should contain (at least):

- Author's name, matric. card number.
- The problem statement with the equations for the trajectory.
- A picture showing the trajectory.
- A figure showing the speed function $f(t) = \|\vec{v}(t)\|$.
- The source code of all Octave scripts used for preparing the report.

Important

- Reports should be prepared as PDF files and sent by e-mail to the respective tutor.
- For grading information, hints and additional materials please visit <http://www.15.pk.edu.pl/~putanowr/iten>.