Vectors with three elements can represent position, velocity, and acceleration. A mass of 5 kg, which is 3 meters away from the x-axis, starts at $x = 2$ meters and moves with a speed of 10 meters per second parallel to the y-axis. Its velocity is thus described by $\mathbf{v} = [0, 10, 0]$, and its position is described by $\mathbf{r} = [2, 10t + 3, 0]$. Its angular momentum vector $\mathbf{L}$ is found from $\mathbf{L} = m(\mathbf{r} \times \mathbf{v})$, where $m$ is the mass. Use MATLAB to:

a. Compute a matrix $\mathbf{P}$ whose 11 rows are the values of the position vector $\mathbf{r}$ evaluated at the times $t = 0, 0.5, 1, 1.5, \ldots 5$ seconds.

b. What is the location of the mass when $t = 5$ seconds?

c. Compute the angular momentum vector $\mathbf{L}$. What is its direction?

The scalar triple product computes the magnitude $M$ of the moment.