

This assignment is in two parts. The first part is due at the start of class on Day 3. It will not be collected, but you are expected to complete these exercises on vectors, just to practice basic skills. If you feel that you need more practice, do more problems, or talk to me.

12.2 Exercises 13, 23, 48

In 4-dimensional space, find a parametrization of the line through the two points $\vec{p} = (-1, 5, 2, 1)$ and $\vec{q} = (3, 4, 4, 1)$.

12.3 Preliminary Questions 3, 5

12.3 Exercises 5-10, 13, 15, 29a, 31, 36, 49 (exactly and approximately), 59, 62

The second part is due on paper at the start of class on Day 5. Submit polished solutions, including all necessary work and no unnecessary work, in the order assigned.

A. 12.3 Exercise 76

B. 12.3 Exercise 78

C. 12.3 Exercise 87. (Do not use $\vec{v} \cdot \vec{w} = |\vec{v}||\vec{w}|\cos\theta$. Follow the procedure outlined.)

D. Let's return to the asteroid problem from Day 1. Working symbolically in terms of \vec{p} , \vec{v} , \vec{q} , \vec{w} , find an expression for the distance between the Earth and the asteroid at time t . Still working symbolically, find the time t when they are closest to each other, and how close they are at that time. Then plug in the specific values of \vec{p} , \vec{v} , \vec{q} , \vec{w} , to get numerical answers to those questions. Finally, discuss whether the asteroid will hit Earth.