MATH 20C Lecture 6 - Tuesday, October 21 2014

Review

- vectors: length and direction, additions, subtraction, multiplication by scalars

- dot product (**scalar!**): definition, connection with the cosine of the angle between vectors.

- cross product (**vector!**): only in 3D; definition, direction $\perp \vec{A}, \vec{B}$ (and right hand rule), length = area of parallelogram with sides $\vec{A}, \vec{B}$; connection with the sine of the angle between vectors.

- planes: $ax + by + cz = d$
  Then $\langle a, b, c \rangle$ is a normal vector.
  To write down equation of a plane need normal vector and a point in the plane.

- lines: parametric equations

- lines and planes (intersect, parallel, etc)

- parametrize curves and motions

- velocity (**vector!**), acceleration (**vector!**), speed (**scalar!**) of a particle moving along a trajectory $\vec{r}(t)$

- unit tangent vector $\hat{\mathbf{T}}$

- arc length (**scalar or function of time!**) of a trajectory $\vec{r}(t)$

- tangent line to a trajectory

- find the component of a vector in a given direction

We went through the some of the extra problems in the study guide: 2, 12, 10.

MATH 20C Thursday, October 23 2014: first midterm