Math 2210-1
Fri 9/24

Review sheet for exam 1 : Topics suggest problems, as in HW problems

11.1 - 11.2 vectors

vector addition & scalar mult; algebraic def'n, geometric meaning
dot product : algebraic def'n.
geometric meaning
angles between vectors
$\text{comp}_{\vec{u}}\vec{v}$
decomposition of $\vec{v}$ into a vector $\parallel \vec{u}$ plus a vector $\perp \vec{u}$
work

11.3 dets & cross product

algebraic def's of dets & cross product
geometric meaning
$\vec{u}\times\vec{v} \perp \vec{u}$ & $\vec{v}$
$|\vec{u}\times\vec{v}| =$
$\square$ areas, $\triangle$ areas

11.4 implicit and parametric eqns for lines & planes

derivation of implicit plane eqn $ax+by+cz=d$ using dot product
intersections of planes & lines with eachother
converting between implicit and parametric (explicit) eqns
using cross & dot products for line & plane geometry.

11.5 - 11.6 - more

linear systems
using reduced row echelon form to find sol'ns
geometric applications (11.4)
affine maps, "Bob" (geometry of affine maps)
matrix algebra
matrix multiplication
inverse matrices

12.1 - 12.2 : parametric curves

velocity, acceleration ($\vec{r}'(t)$, $\vec{r}''(t)$)
limit definitions
geometric meaning
arclength
curvature
unit tangent & normal vectors
$\vec{r}''(t) = v'\vec{T} + \kappa v^2\vec{N}$