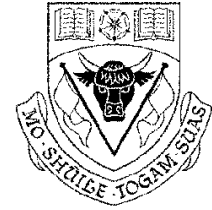


# FINAL REVIEW

## MATH 221 - L01

Winter 2008



UNIVERSITY OF  
CALGARY

### Tools: (All Important)

- Matrices (All aspects)
- Determinant (How to compute and use it)
- Complex numbers (How to work with them and use them when needed)
- Dot and Cross products (How to compute and use it in right situation)
- Projection (How to compute and use it in right situation)
- Angles (How to compute and use it in right situation)

### [32%] System of Linear Equations:

- How to solve a system (RREF + ...)
- Analyze for Solutions (When do we get no solution, unique or infinitely many..)
- Apply in appropriate situations

### [20%] Eigenvalues/Eigenvectors and Diagonalization:

- What it means (Each one of the above)
- How to find eigenvalues/eigenvectors, and how to use them
- What is diagonalization for
- Use and role of complex numbers
- Markov Chains
- Linear Dynamical System

### [48%] Vectors:

- Lines and Planes (Equations, ...)
- Shortest distances and closest points (between points, lines and planes)
- Linear transformation in  $R^n$  (matrix of the transformation, standard examples of linear transformations, composition and inverses)