

**MA 162**  
SOME TOPICS FOR EXAM 1  
SEPTEMBER 22, 2004

1. Lines/Geometry
  - (a) Constructing a line
  - (b) Slope of parallel lines
  - (c) Slope of perpendicular lines
  - (d) Distance formula
  - (e) Pythagorean theorem
  - (f) Intersection of lines
2. Cost and revenue functions
  - (a) Profit =  $R(x) - C(x)$
  - (b) Equilibrium supply and demand
  - (c) Break even production.  $P(x) = 0$
3. Know how to read a problem and set it up in symbolic or equation form.
4. Elementary row operations.
  - (a)  $R_i \leftarrow R_i + cR_j$ , take a multiple of a row and add it to another row.
  - (b)  $R_i \leftrightarrow R_j$ , swap two rows.
  - (c)  $R_i \leftarrow cR_i$ , replace a row by a non-zero multiple of itself.
5. Criteria for RREF and REF.
  - (a) REF has the lower triangle all zeros.
  - (b) RREF, pg. 85 in text, see green box.
6. Know when a system has:
  - (a) No solutions. There is an equation  $0 = c$  for some  $c \neq 0$
  - (b) Unique solution. rank = number of columns
  - (c) Infinite solutions. rank < number of columns
7. Parametric form
  - (a) Pivot positions
  - (b) Free and fixed variables
8. Matrix...
  - (a) Addition
  - (b) Multiplication
  - (c) Inverse
  - (d) Determinant