SUMMARY OF SECTION 2.3

IF A IS $N \times N$ AND k IS A SCALAR, THEN $|kA| = k^n |A|$.

IN GENERAL, $|A+B| \neq |A| + |B|$, BUT IF A, B AND C ARE MATRICES WHICH DIFFER IN ONLY ONE ROW, SAY THE R^{TH}, AND THE R^{TH} ROW OF C IS THE SUM OF THE R^{TH} ROWS OF A AND B, THEN $|C| = |A| + |B|$. THE SAME IS TRUE FOR COLUMNS.

<u>THM</u> – A SQUARE MATRIX IS INVERTIBLE IF AND ONLY IF ITS DETERMINANT IS NONZERO. (ADD TO EQUIV. STATEMENT LIST)

<u>THM</u> – IF A AND B ARE SQUARE MATRICES OF THE SAME SIZE, THEN $|AB| = |A||B|$.

<u>THM</u> – IF A IS INVERTIBLE, THEN $|A^{-1}| = \frac{1}{|A|}$

IF A IS A SQUARE MATRIX AND λ IS A SCALAR SO THAT $Ax = \lambda x$ HAS NON-TRIVIAL SOLUTIONS, THEN λ IS SAID TO BE AN <u>EIGENVALUE</u> OF A. THE NON-TRIVIAL x WHICH SOLVE $Ax = \lambda x$ ARE CALLED <u>EIGENVECTORS OF A CORRESPONDING TO λ</u>.

THE EIGENVALUES OF A CAN BE FOUND BY SOLVING THE EQUATION $|\lambda I - A| = 0$. THIS IS CALLED THE <u>CHARACTERISTIC EQUATION OF A</u>.