

SUMMARY OF SECTION 2.2

THEOREM 1 - LET A BE A SQUARE MATRIX.

a) IF A HAS A ROW OR COLUMN OF ZEROS, THEN $\det(A) = 0$.

b) $\det(A) = \det(A^T)$

A SQUARE MATRIX IN WHICH ALL OF THE ENTRIES ABOVE THE MAIN DIAGONAL ARE ZERO IS CALLED LOWER TRIANGULAR.

A SQUARE MATRIX IN WHICH ALL OF THE ENTRIES BELOW THE MAIN DIAGONAL ARE ZERO IS CALLED UPPER TRIANGULAR.

AN UPPER AND LOWER TRIANGULAR MATRIX IS CALLED DIAGONAL.

THEOREM 2 - IF A IS UPPER TRIANGULAR, LOWER TRIANGULAR OR DIAGONAL, THEN $\det(A) = a_{11} a_{22} a_{33} \cdots a_{nn}$.

THEOREM 3 - LET A BE AN $n \times n$ MATRIX.

a) IF B IS THE MATRIX THAT RESULTS WHEN A SINGLE ROW OR COLUMN OF A IS MULTIPLIED BY k , THEN $\det(B) = k \det(A)$.

b) IF B IS THE MATRIX THAT RESULTS WHEN TWO ROWS OR TWO COLUMNS OF A ARE INTERCHANGED, THEN $\det(B) = -\det(A)$.

c) IF B IS THE MATRIX THAT RESULTS WHEN A MULTIPLE OF ONE ROW OF A IS ADDED TO ANOTHER ROW OR WHEN A MULTIPLE OF ONE COLUMN IS ADDED TO ANOTHER COLUMN, THEN $\det(B) = \det(A)$.