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Louis Deaett* (louis.deaett@quinnipiac.edu) and **Gerard Lisella**. *A graph-theoretic proof of Newton's Identities*. Preliminary report.

Formulas known as “Newton’s Identities” express a relationship between the elementary symmetric polynomials and the power sum symmetric polynomials. These formulas can be used, for example, to write any polynomial in one of these families in terms of polynomials in the other. These identities may also be applied to the eigenvalues of a matrix to give expressions for the coefficients of the characteristic polynomial of the matrix in terms of traces of the matrix powers. Using this fact, we exploit well-known results of combinatorial matrix theory to develop a graph-theoretic proof of Newton’s Identities themselves. (Received September 06, 2014)