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Jon Davidson* (j davidson@sscc.edu), Southern State Community College, 100 Hobart Drive, Hillsboro, OH 45133. *Non-existence of regular polygons in the Cartesian plane with vertices at integer coordinates, except for squares.*

Is it possible to create a regular polygon in the Cartesian plane such that all the vertices have integer coordinates? Except for squares, we shall show that no such polygons can exist. The mathematics required is pre-calculus level and thus the proof is quite understandable to the undergraduate. Furthermore, as a consequence, working this problem exposes a class of polynomials with coefficients from Pascal's triangle which have roots of $\tan(2\pi/n)$. (Received September 22, 2010)