Abstract Submitted
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General Relativity Exactly Described by Use of Newton's Laws within a Curved Geometry DAVID SAVICKAS, Western New England University — The connection between general relativity and Newtonian mechanics is shown to be much closer than generally recognized. When Newton's second law is written in a curved geometry by using the physical components of a vector as defined in tensor calculus, and by replacing distance within the momentum's velocity by the vector metric ds in a curved geometry, the second law can then be easily shown to be exactly identical to the geodesic equation of motion occurring in general relativity.[1] By using a time whose vector direction is constant, as similarly occurs in Newtonian mechanics, this equation can be separated into two equations one of which is a curved three-dimensional equation of motion and the other is an equation for energy. For the gravitational field of an isolated particle, they yield the Schwarzschild equations.[2] They can be used to describe gravitation for any array of masses for which the Newtonian gravitational potential is known, and is applied here to describe motion in the gravitational field of a thin mass-rod.

[1]D. Savickas, Am. J. Phys. 70, 798(2002).
[2]D. Savickas, Int. J. Mod. Phys. A 9, 3555 (1994).

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