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Nonlinear dynamics of three gravitating rods ZIYI SANG, JOHN LINDNER, The College of Wooster — As a generalization of Newton's three body problem, we explore the dynamics of three massive line segments interacting gravitationally. The extension of each line segment or slash (/) provides extra degrees of freedom that enable the interplay between rotation and revolution in an especially simple example while still elucidating the dynamics of non spherical objects like asteroids and space stations. Fortunately, Newton's laws imply exact algebraic expressions for the force and torque between the slashes, and this greatly facilitates analysis of this slash-slash-slash (///) body problem. We provide exact solutions to several symmetrical orbits and numerically study three slashes moving in a figure-8 orbit.

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