

**Meeting:** 1003, Atlanta, Georgia, MAA CP J1, MAA Session on Projects and Demonstrations that Enhance a Differential Equations Course

1003-J1-927      **Richard N. Barshinger\*** (rxb10@psu.edu), Penn State–Scranton, 120 Ridge View Drive,  
Dunmore, PA 18512. *Solving the Linear Drag Flight Equation Analytically.*

The time-of-flight for ground-to-ground vertical motion with linear drag is the nonzero root of  $0 = -2at + (1 + a)(1 - \exp(-2at))$ , where  $a = \text{drag coefficient } x \text{ initial velocity} / \text{gravity constant}$ , and “ $t$ ” is a non-dimensional scaled time variable. Though typically solved numerically, we show how to obtain a convergent series solution in the gauge functions  $a^n / (1 + a)^{(n + 1)}$ . (Received October 01, 2004)