

- (f) _____ a MASS attached by a SPRING to a wall moving on a surface with friction
- (g) _____ TWO MASSES attached by a SPRING moving freely on a frictionless table
- (h) _____ TWO PLANETS which orbit each other
- (i) _____ TWO PLANETS which collide
- (j) _____ a PENDULUM acted on by gravity
- (k) _____ A CANNONBALL which explodes during its trajectory

5. Use the curl (in cartesian coordinates) to show that it is possible to define a potential $U(\mathbf{r})$ associated with a radial force of the form $\mathbf{F} = c\mathbf{e}_r/r^2 = c\mathbf{r}/r^3$, where c is a constant. (You won't need to give U explicitly, but you may if you'd like.)
6. Test Stokes' theorem for the function $\mathbf{V} = (x_1x_2)\mathbf{e}_1 + (2x_2x_3)\mathbf{e}_2 + (3x_3x_1)\mathbf{e}_3$, using a contour which begins at $(0, 0, 0)$, runs along the x_2 axis to the point $(0, 2, 0)$, then in a straight line to $(0, 0, 2)$, and back along the x_3 axis to the origin. For the surface integral, use the triangle in the $x_2 - x_3$ plane that this contour encloses.