1. Set up an integral to compute the flux of $\underline{F} = yz\underline{i} + xy\underline{j} + xy\underline{k}$ through S where S is oriented upward and is the part of the surface $z = \cos x + \sin 2y$ above the triangle in the xy-plane with vertices $(0,0)$, $(0,5)$, $(5,0)$.

   Do not integrate.

2. Find the flux of $\underline{F} = e^{y^2z^2}\underline{i} + (\tan(0.001x^2z^2) + y^2)\underline{j} + (\ln(1 + x^2y^2) + z^2)\underline{k}$ out the surface of the closed box $0 \leq x \leq 5, 0 \leq y \leq 4, 0 \leq z \leq 3$.

3. Consider a solid region W between a sphere, S_1, of radius 2 and a sphere, S_2, of radius 5. (This region is shaped like the flesh of a cantaloupe or a peach, and excludes the seed part in the center). Let S_1 and S_2 both be oriented inward.

   Provide an equation that relates $\int_{S_1} \underline{F} \cdot d\underline{S}, \int_{S_2} \underline{F} \cdot d\underline{S}, \int_W \nabla \cdot \underline{F}\, dV$.