

1. Compute the flux the vector field  $\mathbf{F} = \langle y, -x, z \rangle$  outward through the boundary of the solid region  $E$  enclosed by the paraboloid  $z = 1 - x^2 - y^2$  and the plane  $z = 0$ .

Compare with your answer computed directly last time.

2. Compute the flux the vector field  $\mathbf{F} = \langle xy, y^2 + e^{xz^2}, \sin(xy) \rangle$  outward through the boundary of the solid region  $E$  enclosed by  $z = 1 - x^2$  and the planes  $z = 0$ ,  $y = 0$ , and  $x + y = 2$ .