**Calc 3 Homework Problems**

1. Find the flux integral over the vector field through the closed surface
2. Find the flux of the vector field through the region bounded by the parabolic cylinder and the planes *z = 0, y = 0*, and *y + z = 2.*
3. Consider the vector field and the surface S given by and . Compute (a) using the divergence theorem and (b) the old-fashioned way, i.e. using standard surface integration (which would involve two integrations).
4. Compute the flux for over the ellipsoid
5. Consider the vector filed F as shown. Is div(F) positive, negative, or zero at the points P1 and P2 ?