

Worksheet 23

May 7, 2008

1. Find the flux of the vector field

$$\mathbf{F} = \langle x^2y, y^2z, z^2x^2 \rangle$$

through the portion of the upper hemisphere $x^2 + y^2 + z^2 = 25$, $z \geq 0$ inside the cylinder $x^2 + y^2 = 16$

- (a) directly, and
 - (b) using the divergence theorem and the disc of radius 4 in the plane $z = 3$.
2. Work on your homework.