

Math 2270 Quiz 5A

Name _____

Points will be deducted for untidy or disorganized answers

1. Let S_1 denote the part of the plane $y + z = 2$ that lies inside the cylinder $x^2 + y^2 = 4$.

(a) Find the surface area of S_1 .

(b) Find the flux

$$\iint_{S_1} \mathbf{F} \cdot \mathbf{n} \, d\sigma$$

of the vector field $\mathbf{F} = \langle x, y, z \rangle$ upwards across S_1 .

2. Let S_2 denote the part of the cylinder $x^2 + y^2 = 4$ that lies between the planes $y + z = 2$ and $z = 0$.

(a) Find the surface area of S_2 .

(b) Find the flux

$$\iint_{S_2} \mathbf{F} \cdot \mathbf{n} \, d\sigma$$

of the vector field $\mathbf{F} = \langle x, y, z \rangle$ outwards across S_2 .