**MATH 224B** **NAME:**
**Instructor: Junaid Hasan** **NET ID:**

**Quiz 6**
**20 minutes**

**Question 1**

Let $E$ be the region in the first octant ($x \geq 0, \quad y \geq 0, \quad z \geq 0$) below the plane $x + y + z = 4$, and let $S$ be its boundary surface with the outward orientation.

Let $\mathbf{F}(x, y, z) = (x^2 + \sin \pi y)\,\widehat{\mathbf{i}} + \sqrt{x^4 + z^4 + 1}\,\widehat{\mathbf{j}} + xz\,\widehat{\mathbf{k}}$. Evaluate

$$\iint_S \mathbf{F} \cdot \mathrm{d}\mathbf{S}\,.$$

*Hint: The divergence theorem may help you!*

**SCRATCH PAPER**