# SURFACE AREA

(1-5) Use the formula $\text{Surface Area } = \iint_S dS = \iint_R \sqrt{\left(\frac{\partial z}{\partial x}\right)^2 + \left(\frac{\partial z}{\partial y}\right)^2 + 1}\, dA$ to find the surface area of the following planes over the region defined, for problems 1 through 3, by the intervals $0 \le x \le 1$ and $0 \le y \le 1$, and, for problems 4 and 5, by the intervals $0 \le x \le 2$ and $0 \le y \le 2$.

1. $z = x + y + 3$

2. $z = 2x - y + 1$

3. $z = 3x + 2y + 4$

4. $z = 8x + 4y + 2$

5. $z = -x - y - 10$

6. Find the area of the portion of the plane $x + y + z = 1$ in the first octant.