1. [5pts] Use polar coordinates to find the volume of the solid bounded by the paraboloids $z = 3x^2 + 3y^2$ and $z = 4 - x^2 - y^2$.

2. [5pts] Evaluate $\iiint_E xy\,dV$, where $E = \{(x, y, z) | 0 \leq x \leq 3, 0 \leq y \leq x, 0 \leq z \leq x + y \}$. 