1. Using a double integral in polar coordinates, find the volume of the region bounded by the paraboloids \( z = 12 - 2x^2 - y^2 \) and \( z = x^2 + 2y^2 \).

2. Write \( \iiint_E f(x, y, z)\,dV \) as an iterated integral if \( E \) is the region in the first octant bounded by the coordinate planes and the graphs of \( z = \frac{x^2}{4} + y^2 + 2 \) and \( x^2 + y^2 = 1 \).