

M032 Take Home Quiz Due Wednesday, Dec 7 at the beginning of class Name _____

1. Find the center of mass of the triangular lamina with vertices $(0,0)$, $(3,3)$ and $(6,0)$ where the density of the lamina is $\rho(x, y) = x$.

2. Use a triple integral to find the volume of the solid bounded by the elliptic cylinder $4x^2 + z^2 = 4$ and the planes $y = 0$ and $y = z + 2$. Include a sketch of the solid.

3. Evaluate $\iiint_E x^2 + y^2 dV$ where E is the solid that lies within the cylinder $x^2 + y^2 = 4$, above the plane $z = 0$ and below the cone $z^2 = 4x^2 + 4y^2$. Include a sketch of the solid.

4. Evaluate $\iiint_E (4 - x^2 - y^2) dV$ where E is the hemispherical region that lies above the xy plane and below the sphere $x^2 + y^2 + z^2 = 4$. Include a sketch of the solid.