



A solid is bounded in the x and y directions by the region shown above and is bounded below and above in the z direction by the planes $z=8$ and $z=x+y+2$. The density of the solid is given by

$$\rho = \frac{z^3 \cos(x+y+z)}{2x+3z+2} + z^2 \ln(y\sqrt{z+y^3})$$

The mass of the solid is given by the following triple integral:

$$\text{mass} = \int_2^4 dx \int_g^h dy \int_v^w dz \cdot \rho$$

$\left| \begin{array}{l} g = \text{lower function on graph} \\ h = \text{upper function on graph} \\ v = \text{first expression for } z \\ w = \text{second expression for } z \end{array} \right.$

Write a MATLAB program to calculate and print the mass of the solid. Use $1e-5$ as the accuracy factor. The output of this program should look like this:

mass = 7523.4292