

9. (10 points) Paleontologists have found some interesting fossils embedded in a stalagmite in a cave. To help determine the age of the fossils they want to measure the mass of the stalagmite.

At its base, the stalagmite has a radius of 50 cm and its height $h(r)$, r cm from its center is $\frac{r^2 - 100r + 2500}{50}$ cm. The density of the limestone from which the stalagmite is made r cm from its center is $\frac{50 + r}{50}$ g/cm³. (See the figure.)

To help determine the age of the fossils, the paleontologists want to calculate the mass of the stalagmite. What is this mass?

