

An ice cream cone is to be dipped in chocolate. The cone can be described by the equation  $z^2 = 9(x^2 + y^2)$ , with  $0 \leq z \leq 9$  and  $x$ ,  $y$ , and  $z$  in centimeters. The dipping process is such that the resulting (surface) density of chocolate on the cone is given by  $\sigma = 1 - \frac{z}{9}$  in grams per square centimeter. Find the total amount of chocolate on the cone.

*(There is no ice cream on the cone!)*

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