

6.1.15. Sketch.

we will $\int_0^1 A(z) dz$

$$A(z) = L \times L = L^2 \quad L = L(z)$$

Find points (x, y, z)

satisfying ①, ② and ③

$$\textcircled{1} \ \& \ \textcircled{2} \Rightarrow x^2 + z^2 = y^2 + z^2$$

$$\Rightarrow x^2 = y^2 \Rightarrow y = \pm x$$

$$L = \text{distance from } (x, x) \text{ to } (x, -x) = 2x$$

$$\text{By } \textcircled{1} \quad x = \sqrt{1 - z^2}$$

$$A(z) = (L(z))^2 = (2\sqrt{1 - z^2})^2 = 4(1 - z^2).$$

$$A(0) = 4, \quad A(1) = 0.$$

