Think Academy

AMC Day19

1 （1分）The region consisting of all points in three-dimensional space within 3 units of line segment $\overline{AB}$ has volume 216π. What is the length AB? （2017 AMC 10A Problem 11）

A. 6　　B. 12　　C. 18　　D. 20　　E. 24

2 （1分）A rectangular box $\mathcal{P}$ has distinct edge lengths a, b, and c. The sum of the lengths of all 12 edges of $\mathcal{P}$ is 13, the sum of the areas of all 6 faces of $\mathcal{P}$ is $\frac{11}{2}$, and the volume of $\mathcal{P}$ is $\frac{1}{2}$. What is the length of the longest interior diagonal connecting two vertices of $\mathcal{P}$? （2023 AMC 10B Problem 17）

A. 2　　B. $\frac{3}{8}$　　C. $\frac{9}{8}$　　D. $\frac{9}{4}$　　E. $\frac{3}{2}$

3 （1分）

Let B be a right rectangular prism (box) with edge lengths 1, 3, and 4, together with its interior. For real $r \geq 0$, let $S(r)$ be the set of points in 3-dimensional space that lie within a distance r of some point in B. The volume of $S(r)$ can be expressed as $ar^3 + br^2 + cr + d$, where a, b, c, and d are positive real numbers. What is $\frac{bc}{ad}$? (2020 AMC 10B Problem 20)

A. 6 B. 19 C. 24 D. 26 E. 38