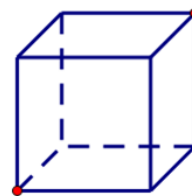


Here is a sample of five questions. The more you do these types of questions the better you will get! By joining the Math Team, you will have an opportunity to share your ideas and collaborate on the solutions.

1. A bug is confined to the inside of a cube with an edge of 1 unit in length. What is the shortest distance it can crawl to get from one corner of the cube to the opposite corner? (The bug cannot jump or fly. It must always be in contact with the cube.)

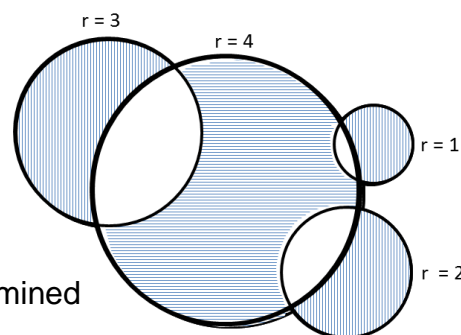


- a) $\sqrt{3}$ b) 2 c) $\sqrt{5}$ d) $1 + \sqrt{2}$

2. If $\log_b(x) = y$, then $\log_{\left(\frac{1}{b}\right)}\left(\frac{1}{x}\right) = ?$

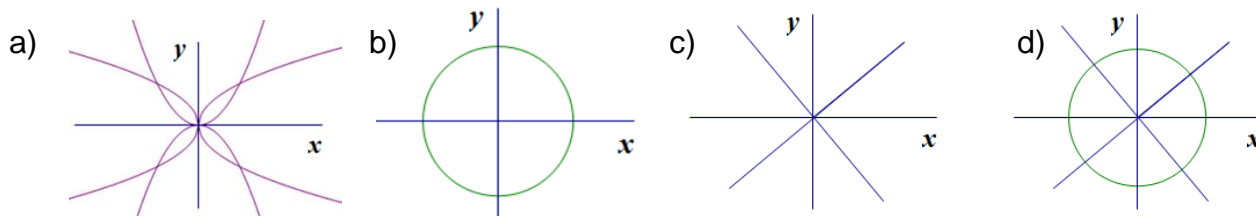
- a) $-y$ b) y c) $\log_b(y)$ d) $\log_y(b)$

3. Let A_1 equal the total area of the vertically shaded regions, and A_2 equal the area of the horizontally shaded region. The radius of each circle is given. What is $A_2 - A_1$?



- a) π b) 2π c) 3π d) cannot be determined

4. Which of the following is the graph of $x^4 - y^4 = x^2 - y^2$?



5. Four logicians at a restaurant have just finished their lunch when the waitress comes by and asks, "Do you all want coffee?" The first logician answers, "I don't know." The second and third logicians also answer, "I don't know." The fourth logician answers, "No." Assuming all four of them responded with correct answers, how many want coffee?

- a) 0 b) 1 c) 3 d) It cannot be determined from the given information.