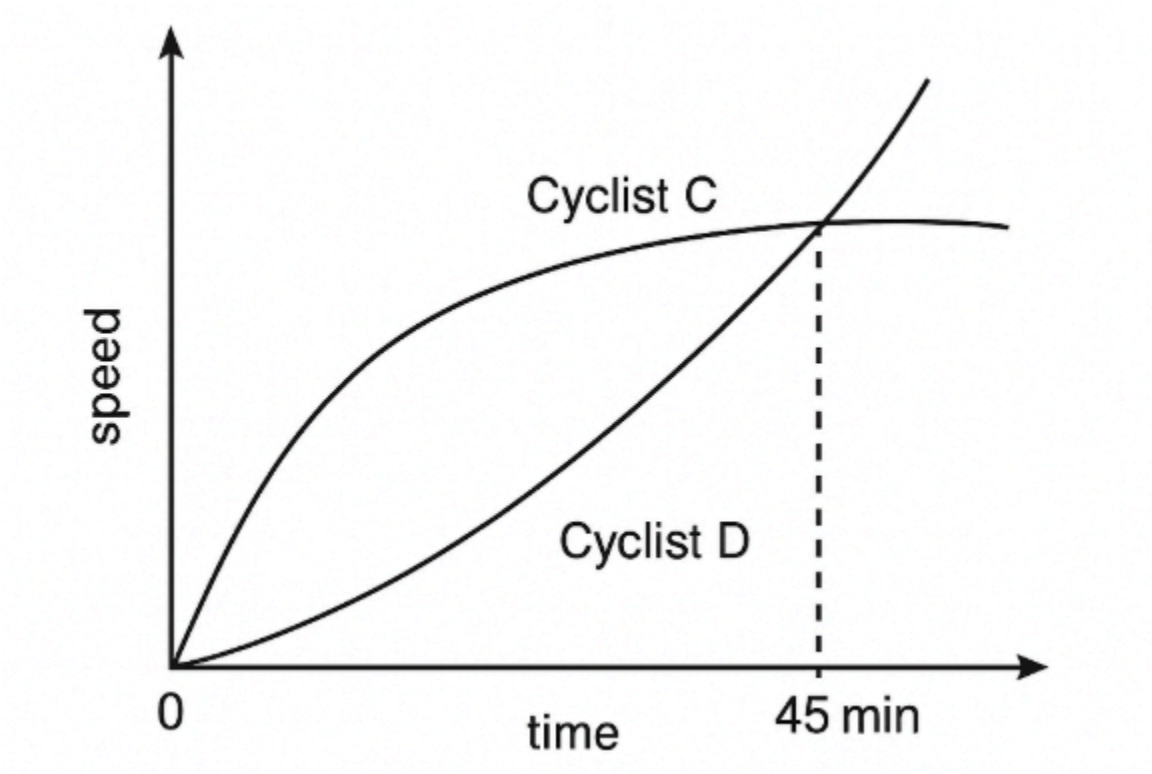
Calculus Practice Question 1



Two cyclists, C and D, start at the same position and ride in the same direction. The graph of their speed vs. time behaves as follows:

1. From t = 0 to t = 45 minutes, cyclist C's speed is always greater than cyclist D's.

2. At t = 45 minutes, their speeds are equal (the speed curves meet).

3. After t = 45 minutes, cyclist D's speed becomes greater than cyclist C's.

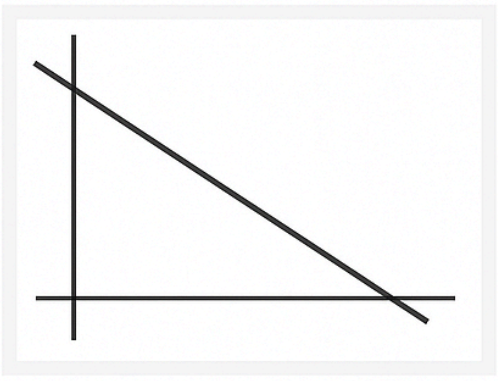
Question: At t = 45 minutes, which statement about their positions is true?
A) Cyclist C is ahead of cyclist D.
B) Cyclist D is ahead of cyclist C.
C) Cyclist D is passing cyclist C at that moment.
D) Cyclist C is passing cyclist D at that moment.

Reply with A, B, C, or D and one sentence explaining why.

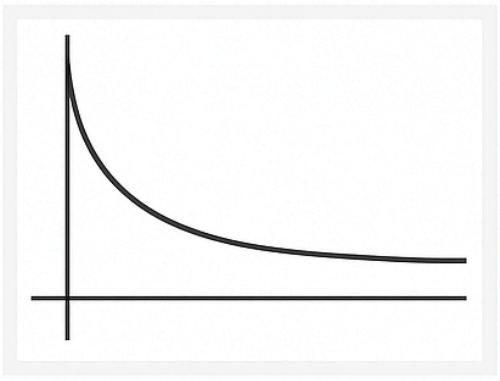
Calculus Practice Question 2

If y = g(x) is a function that is increasing at a decreasing rate, which of the following could be the graph of y = g(x)?

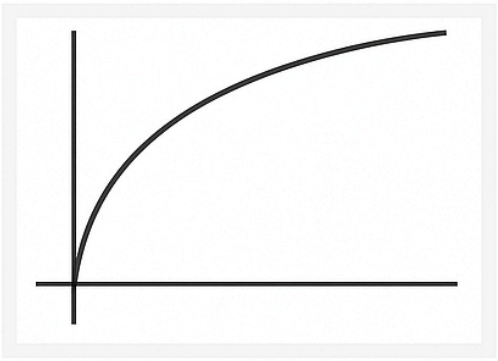
A



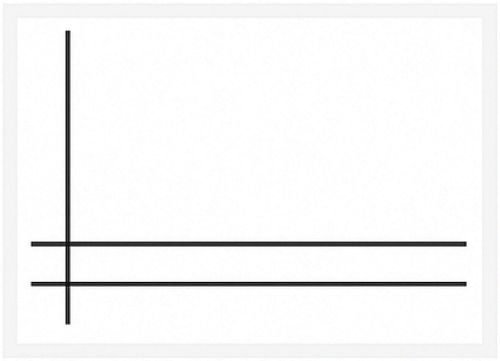
B



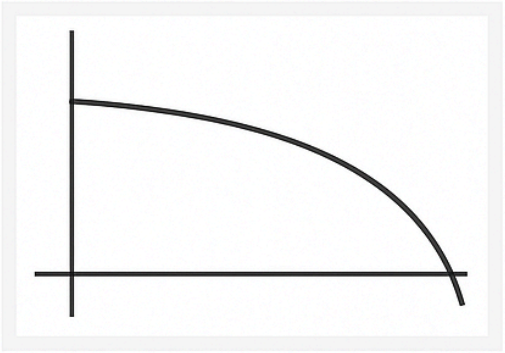
C



D



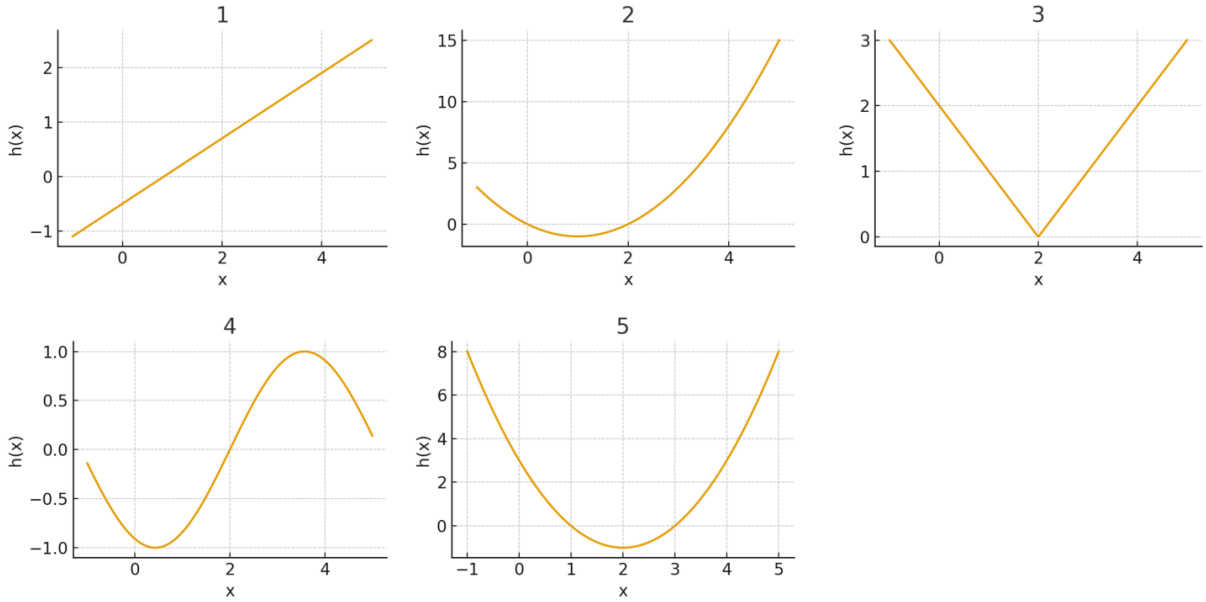
E



Calculus Practice Question 3

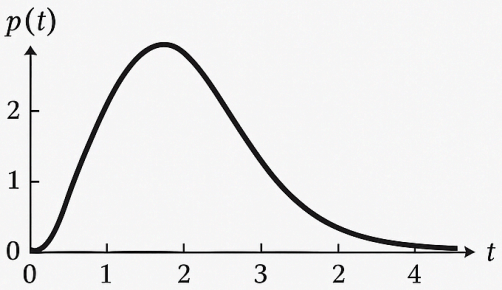
The function h has a rate of change of 0 at x = 2. Which of the graphs, numbered 1 to 5, could be the displayed graph of h?

(Each graph shows a possible function h.)



A. Graph 1
B. Graph 2
C. Graph 3
D. Graph 4
E. Graph 5

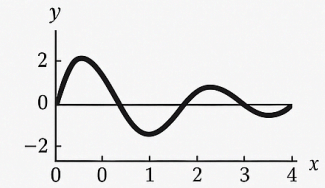
Calculus Practice Question 4



The function $B(x)$ gives area between the graph of $p(t)$ and the t-axis over the interval $0 < t < x$.

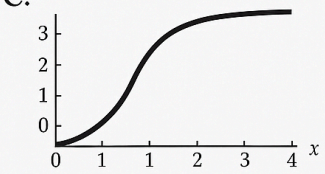
Which of the following could be the graph of $B(x)$?

A.

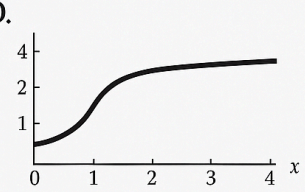


B.

C.

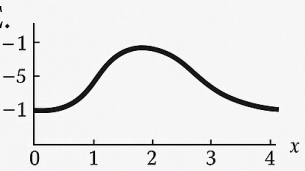


D.



E.

E.



A. Decreasing curve with oscillation around the x-axis
B. Bell-shaped curve peaking near the middle
C. Increasing S-shaped curve that levels off
D. Increasing curve that rises quickly then flattens
E. Bell-shaped curve with negative values