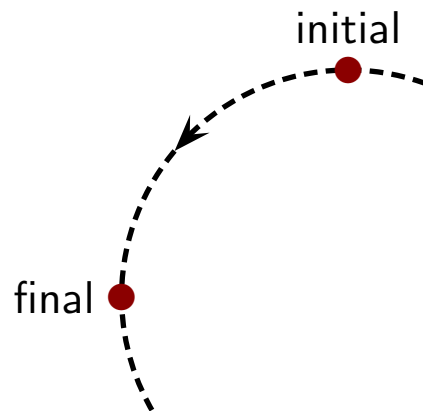






# Question 1

A bug moves along a circular arc at a constant speed.

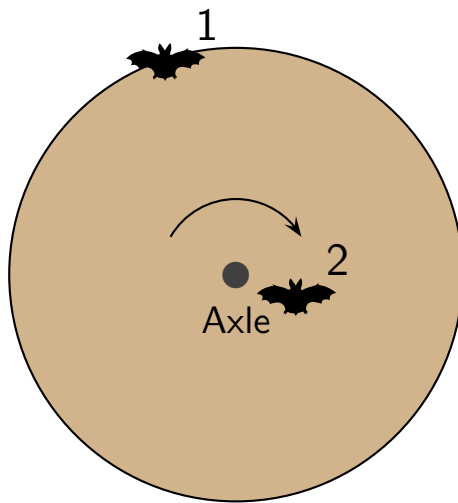


Which of the following is true about the average acceleration from the initial instant to the final instant as illustrated?

1.  $\vec{a}_{av} = 0$
2.  $\vec{a}_{av} \neq 0$  with direction 
3.  $\vec{a}_{av} \neq 0$  with direction 
4.  $\vec{a}_{av} \neq 0$  with direction 
5.  $\vec{a}_{av} \neq 0$  with direction 

## Question 2

Bats cling to fixed locations on a wheel. The wheel rotates clockwise about an axle through its center at a constant rate. Bat 2 is closer to the axle than bat 1.

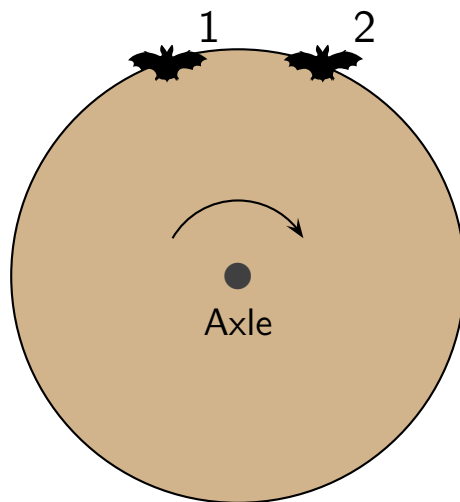


Which of the following is true?

1. Bat 1 has the same acceleration as bat 2.
2. Bat 1 has a smaller acceleration than bat 2.
3. Bat 1 has a larger acceleration than bat 2.

## Question 3

A bat clings to the edge of a wheel. The wheel rotates clockwise about an axle through its center, speeding up at a constant rate. The bat's location is shown at two instants.



Which of the following is true about the average acceleration from instant 1 to instant 2 as illustrated?

1.  $\vec{a}_{av} = 0$
2.  $\vec{a}_{av} \neq 0$  with direction  $\rightarrow$
3.  $\vec{a}_{av} \neq 0$  with direction  $\downarrow$
4.  $\vec{a}_{av} \neq 0$  with direction  $\searrow$
5.  $\vec{a}_{av} \neq 0$  with direction  $\swarrow$
6.  $\vec{a}_{av} \neq 0$  with direction  $\nearrow$