Q) An ant crawls on a wheel of radius 40 cm. Find the

i) Distance traveled by it when it completes half a rotation.

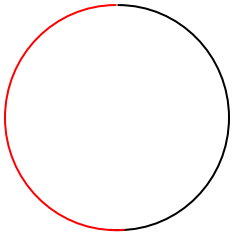
ii) Displacement of it when it completes half a rotation.

Answer:

i) Distance covered for half the rotation is $\pi \times$r [half of the circumference].

= 3.14 $\times$ 40 cm [approx]

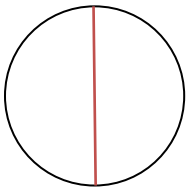
= 125.6 cm [approx.]



The arc in red shows the distance travelled.

ii) Displacement is the least distance between two points. In planar geometry it is the length of straight line between the end point and the starting point, which here is just the diameter

= 80cm.



The line in red shows the displacement