Answer on Question #52074, Physics, Mechanics | Kinematics | Dynamics

A man is moving on his bike with 54km/hr. He takes a U-turn in 10 s and continues to move with the same velocity. Find average acceleration during this time-

a) 3.0 m/s^2 b) 1.5 m/s^2 c) 0 d) -1.5 m/s^2

Solution:

The acceleration is

$$a = \frac{v_f - v_i}{t}$$

In our case:

$v_i = 54\frac{\text{km}}{\text{h}} = 15\ \text{m/s},$

$v_f = 15\ \text{m/s},$

$t = 10\ \text{s},$

Thus,

$$a = \frac{-15\vec{\imath} - (15)\vec{\imath}}{10} = -3\vec{\imath}$$

$$|a| = 3\ \text{m/s}^2$$

Answer: a) 3.0 m/s^2