Answer on Question # 48627, Physics, Mechanics | Kinematics | Dynamics

Task:

on a foggy day, two drivers spot in front of each other when 80 metre apart. They were travelling at 70kmph and 60kmph. Both apply brakes simultaneously which retard the cars at the rate 5 m/s^2. Which of the following statements is correct?

1. The collision will be averted
2. The collision will take place
3. They will cross each othe
4. They will just collide

Solution:

Find the stopping distance of each car.

Stopping distance of car with 72 km/h (700/36 m/s)speed.

$2aS=v^2-u^2$

$2(-5)S_1=0-(700/36)^2$, so $S_1=37.8$ m.

Stopping distance of car with 60 km/h (600/36 m/s) speed.

$2(-5)S_2=0-(600/36)^2$, so $S_2=27.77$ m.

$S_1+S_2=65.57$m

As the distance covered by both of the cars evaluated shows that they stop before they come in contact with each other.

Answer: 1)The collision will be averted