

Vehicle A and Vehicle B are moving in opposite directions on the NJTP. Vehicle A is heading south toward atlantic city while vehicle B is heading north towards Hoboken. In situation 1 and 2 described below, at $t = 0$ s both vehicles are at a distance of separation of 400m and are moving towards each other.

Situation 1: When vehicle A is moving at a constant velocity of 30 m/s and travels a distance of 120 m, the vehicles pass each other on the turnpike.

Situation 2: When vehicle A is moving at a constant velocity of 80 m/s and after a time of 3s, the vehicles pass each other on the turnpike.

For vehicle A label variables as: V_{ia} , V_{fa} , a_a , d_a , t_a

For vehicle B label variables as: V_{ib} , V_{fb} , a_b , d_b , t_b

In the ORDER INDICATED:

- (a) Calculate the initial velocity of vehicle B or V_{ib} ; and
- (b) Then calculate the acceleration of vehicle B or a_b

Show all work in DETAIL and keep all numerical values to the nearest hundredth value.
Draw and label all pictures

Note: You will receive NO CREDIT if you first calculate part (b) and then part (a)

For situations 1 and 2

$v_{ib} = \text{constant}$; $v_{fb} \neq \text{a constant value since its value changes w/ time}$

$a_b = \text{constant}$