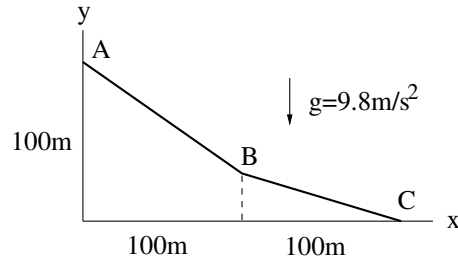


### [mex30] Brachistochrone problem I

A particle of mass  $m$  slides from rest down from point  $A$  to point  $C$  along a frictionless path consisting of two straight-line segments that are joined at point  $B$  with coordinates  $(x, y) = (100m, ??)$ . At what height should point  $B$  be positioned to make the particle travel from  $A$  to  $C$  in the shortest time. Find the time  $t_O$  it takes the particle to travel from  $A$  to  $C$  along the optimal path and the time  $t_S$  along a straight path.



**Solution:**