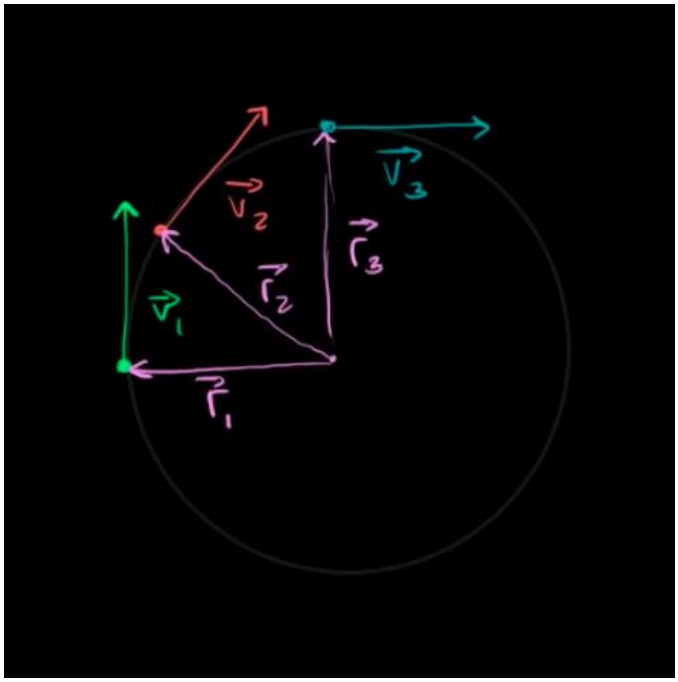
Problem 4

If you run in a circle around a tree of diameter of 1.5 meter, how much velocity do you need to attain in order to touch your back using your hands raised at 90 degrees. Is it even possible to do so? Comment about its theoretical & practical possibilities.

Answer:

It is not possible to touch our back using hand raised at 90 degrees. Also, the velocity and diameter are not matter in this case. It is because if we have our hands in 90 degree which means it will be always perpendicular to the radius of the tree.

We can think it as a centripetal acceleration where the direction of the velocity is the same as the direction of our hand.



Where ‘v’ is hand in a 90 degree. Which mean size of the tree will be not matter when our hand is 90 degree. And what I've drawn here is its hand vector at different points along that path.