1. (a) A particle is projected with speed u up a smooth inclined plane with inclination of $30°$ to the horizontal. It travels for 50 m along a line of greatest slope before reaching the top of the inclined plane. After leaving the inclined plane, it travels in a curved path before hitting a target which is at the same horizontal level as the base of the inclined plane and at a distance 153.3 m from the vertical face of the inclined plane. Calculate the value of u.

[5 marks]

[$u = 43$ ms^{-1}]

1. (b) Consider the case where the surface of the inclined plane is not smooth. The coefficient of kinetic friction between the particle and the inclined plane is 0.25. What **percentage change** in the value of u will make the particle strike the target again after leaving the top of the inclined plane?

[5 marks]

[5.46%]