**6D Deriving Formulae**

1. A particle is projected from a point on a horizontal plane with an initial velocity at an angle above the horizontal, and moves freely under gravity until it hits the plane at point B. Given that the acceleration due to gravity is , find expressions for:
2. The time of flight,
3. The range, , on the horizontal plane
4. A particle is projected from a point with speed and an angle of elevation , and moves freely under gravity. When the particle has moved a horizontal distance , its height above the point of projection is .

Show that:

1. A particle is projected from a point A on a horizontal plane, with initial speed 28ms-1 and an angle of elevation θ. The particle passes through a point B, which is 8m above the plane and a horizontal distance of 32m from A

Find the two possible values of θ, giving your answers to the nearest degree.

(Use the formula we have just calculated)