13 A projectile is fired from ground level at $35\,\text{m s}^{-1}$ at an angle of $\theta°$ above the horizontal.

(a) State a modelling assumption that is used in the standard projectile model. [1]

(b) Find the cartesian equation of the trajectory of the projectile. [4]

The projectile travels above horizontal ground towards a wall that is $110\,\text{m}$ away from the point of projection and $5\,\text{m}$ high. The projectile reaches a maximum height of $22.5\,\text{m}$.

(c) Determine whether the projectile hits the wall. [6]