

2H Modelling with Quadratics

1. A spear is thrown over level ground from the top of a tower. The height, h , in metres, of the spear above the ground after t seconds is modelled by the function:

$$h(t) = 12.25 + 14.7t - 4.9t^2, \quad t \geq 0$$

- a) Interpret the meaning of the constant 12.25 in the question
- b) After how many seconds does the spear hit the ground?
- c) Write $h(t)$ in the form $A - B(t - C)^2$, where A , B and C are constants to be found.
- d) Using your answer to part c), or otherwise, find out the maximum height of the spear, and when it reaches this height