15 A family is planning a holiday in Europe. They need to buy some euros before they go. The exchange rate, y, is the number of euros they can buy per pound. They believe that the exchange rate may be modelled by the formula

$$y = at^2 + bt + c,$$

where t is the time in days from when they first check the exchange rate.

Initially, when $t = 0$, the exchange rate is 1.14.

(a) Write down the value of c. **[1]**

When $t = 2$, $y = 1.20$ and when $t = 4$, $y = 1.25$.

(b) Calculate the values of a and b. **[2]**

The family will only buy their euros when their model predicts an exchange rate of at least 1.29.

(c) Determine the range of values of t for which, according to their model, they will buy their euros. **[3]**

(d) Explain why the family's model is not viable in the long run. **[1]**