11 On the day that a new consumer product went on sale (day zero), a call centre received 1 call about it. On the 2nd day after day zero the call centre received 3 calls, and on the 10th day after day zero there were 200 calls.

Two models were proposed to model N, the number of calls received t days after day zero.

Model 1 is a linear model $N = mt + c$.

(a) Determine the values of m and c which best model the data for 2 days and 10 days after day zero. **[3]**

(b) State the rate of increase in calls according to model 1. **[1]**

(c) Explain why this model is not suitable when $t = 1$. **[1]**

Model 2 is an exponential model $N = e^{0.53t}$.

(d) Verify that this is a good model for the number of calls when $t = 2$ and $t = 10$. **[2]**

(e) Determine the rate of increase in calls when $t = 10$ according to model 2. **[3]**