Marked example 3

Paper 2 style · Graphic display calculator

3 5 marks SL 2.9 · 2.10 ●●○ Typical

The amount of a medicine in the blood, in mg, t hours after it is taken is modelled by $A(t) = 50 \times 0.85^t$.

(a) Write down the initial amount of medicine. **[1]**

(b) Find the amount after 6 hours. **[1]**

(c) Write down the percentage of the medicine lost each hour. **[1]**

(d) Find the time after which the amount is less than 5 mg. **[2]**

MARKSCHEME (a)

50 mg **A1**

Total 1 mark

MARKSCHEME (b)

18.9 mg (18.8574 . . .) **A1**

Total 1 mark

MARKSCHEME (c)

15 % **A1**

Total 1 mark

Note Each hour keeps 85 % of the amount.

MARKSCHEME (d)

$50 \times 0.85^t = 5$ **(M1)**

$t = 14.2$ hours (14.1681 . . .) **A1**

Total 2 marks

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