Exponentials and Logarithms – 2022 GCE Pure Mathematics A

1. June/2022/Paper_H240/01/No.8

(a) Substance A is decaying exponentially such that its mass is m grams at time t minutes. Find the missing values of m and t in the following table.

t	0	10		50
m	1250	750	450	

[2]

(b) Substance B is also decaying exponentially, according to the model $m = 160e^{-0.055t}$, where m grams is its mass after t minutes.

(i) Determine the value of t for which the mass of substance B is half of its original mass. **[3]**

(ii) Determine the rate of decay of substance B when $t = 15$. **[3]**

(c) State whether substance A or substance B is decaying at a faster rate, giving a reason for your answer. **[1]**