

Advanced Higher Maths
SQA 2025 Paper 2
Question 9



Relative to a fixed origin, the velocity, v metres per second, of an object at time t seconds is given by $v = 2t + e^{5t}$.

- (a) Find an expression for the displacement of the object, s metres, in terms of t , given that when $t = 0$, $s = 0$. 2
- (b) Show that the acceleration of the object is always positive. 2
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Answers:

(a) $t^2 + \frac{1}{5}e^{5t} - \frac{1}{5}$

(b) Acceleration = $2 + 5e^{5t}$ and $e^{5t} > 0$ for all values of t .