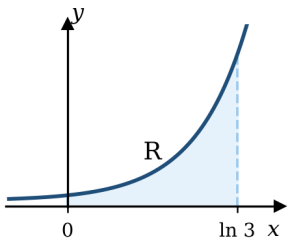
Day 365	A Level Maths: B Tier 10-a-day
1 A summary of the ages, a years, of 9 members of a club gives $\Sigma a = 237$ and $\Sigma a^2 = 7181$. Find the mean and the standard deviation (3 s.f.).	
2 The curve C has equation $y = x \ln x - 3x$. Find the equation of the tangent to C at the point where $x = 1$, in the form $y = mx + c$.	
3 Simplify $\frac{(4x^2)^3 \times 6x}{x}$.	
4 A particle moves in a straight line. At time t seconds its velocity is $v = 3t^2 - 4t + 3$ m s^{-1}. Find the distance moved between $t = 0$ and $t = 3$. (The particle does not change direction.)	
5 Evaluate $\sum_{r=1}^{7} 5 \times 2^r$.	

Day 365 **A Level Maths: B Tier 10-a-day**

6 A particle moves in a straight line. At time t s its velocity is $v = 24t - 3t^2$ m s^{-1}, for $t \geq 0$.
Find the maximum speed of the particle and the time at which it occurs.

7 X ~ B(7, 0.4) and Y ~ B(10, 0.1) are independent.
Find P(X = 3 and Y ≤ 1), to 3 significant figures.

8 The region R is bounded by the axes, the line x = ln 3
and the curve $y = 3e^{3x} + 3$. Find the exact area of R.



9 Express $\frac{-9x - 18}{(x + 1)(x + 4)}$ in partial fractions.

10 A curve has equation $x^2 + xy + 2x + y^2 - y = 3$.
Find $\frac{dy}{dx}$ in terms of x and y, and the gradient at (−3, 0).