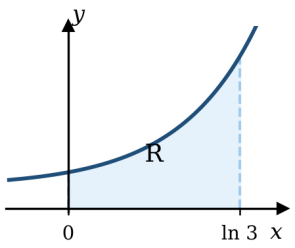
Day 38	A Level Maths: B Tier 10-a-day
1 Find the exact value of $\int_1^2 (2e^{2x} + \frac{3}{x})\,dx$.	
2 P(A) = 0.4, P(B) = 0.2, P(A ∩ B) = 0.15. Find (a) P(A ∪ B), (b) P(A | B). (c) Are A and B independent?	
3 Given that $15\cos\theta + 8\sin\theta \equiv 17\cos(\theta - 28.1°)$, find the greatest value of $\frac{1}{(19 + 15\cos\theta + 8\sin\theta)}$.	
4 A class of width 20, frequency 15, is a bar 4 cm wide, 1.875 cm tall. (a) Find the bar height for width 20, frequency 24. (b) Find the frequency of a 1 cm by 5 cm bar.	
5 Solve $9^{2x-3} = 3^{x+3}$.	

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6 A model car moves in a straight line. At time t seconds its acceleration is $5t + 4$ m s^{-2}.
When $t = 0$ the velocity is 4 m s^{-1}. Find the velocity when $t = 4$.

7 The region R is bounded by the axes, the line $x = \ln 3$
and the curve $y = 2e^{2x} + 3$. Find the exact area of R.



8 $f(x) = x^3 + px^2 + qx - 8$.
When f(x) is divided by $(x + 3)$ the remainder is 31, and when divided by $(x - 3)$ the remainder is 43. Find p and q.

9 A particle moves in a straight line. At time t s its velocity is $v = 2t - 0.5t^2$ m s^{-1}, for $t \geq 0$.
Find the maximum speed of the particle and the time at which it occurs.

10 (a) Expand $(1 + 3x)^{-2}$ in ascending powers of x up to and including the term in x^3.
(b) State the range of values of x for which the expansion is valid.