Day 319	A Level Maths: C Tier 10-a-day
1 The table shows values of y = f(x). x: 0 0.25 0.5 0.75 1 1.25 y: 7.5 8.1 7.6 1.7 1.9 1.6 Use the trapezium rule to estimate the area under the curve between x = 0 and x = 1.25.	
2 A particle moves in a straight line. Its velocity at time t seconds is v m s^{-1}, where $v = 4t^2 - 16t + 4$. (a) Find its acceleration when t = 2. (b) Find the time when its acceleration is zero.	
3 $f(x) = (x + 1)^2 - 4$, $x \geq 0$. Find the range of f.	
4 For 10 values, $\Sigma x = 320$ and $\Sigma x^2 = 10520$. Find the mean and the standard deviation.	
5 A particle moves in a straight line. Its velocity at time t seconds is $v = (t^2 - 11t + 24)$ m s^{-1}. (a) Find the times when the particle is at rest. (b) Find its acceleration at the first of these times.	

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6 Sketch $y = \|x^2 - 4\|$. Write down the coordinates where the graph meets the axes and the coordinates of the local maximum point.	
7 $\frac{2x + 4}{(x + 4)(x + 3)} \equiv \frac{A}{x + 4} + \frac{B}{x + 3}$. Find A and B, and hence find $\int \frac{2x + 4}{(x + 4)(x + 3)}\, dx$.	
8 The probability that it rains is 0.5. If so, the probability that Sam is late is 0.3; otherwise it is 0.2. Given that Sam is late, find the probability that it rains.	
9 The curve $y = ab^x$ passes through (0, 6) and (2, $\frac{2}{3}$). Find the values of a and b.	
10 Express $\frac{2x - 5}{(x + 3)^2}$ in the form $\frac{A}{(x + 3)} + \frac{B}{(x + 3)^2}$.	