Day 278	A Level Maths: C Tier 10-a-day
1 Differentiate with respect to x: (a) $5\,e^{4x}$ (b) $5\cos 4x$	
2 A particle moves in a straight line. Its velocity at time t seconds is v m s^{-1}, where $v = t^2 - 6t + 1$. (a) Find its acceleration when t = 2. (b) Find the time when its acceleration is zero.	
3 By writing 75° as 30° + 45°, find the exact value of sin 75°.	
4 X ~ B(10, 0.1). Find $P(1 \leq X \leq 2)$, giving your answer to 3 s.f.	
5 Solve $\|3x + 3\| = 12$.	

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6 A particle moves in a straight line. Its velocity at time t seconds ($0 \leq t \leq 2$) is $v = (-t^2 + 2t)$ m s^{-1}. Find the maximum velocity and the time at which it occurs.	
7 Simplify $(4x^4)^3 \div 16x^{-1}$.	
8 The probability that a patient takes the drug is 0.3. If so, the probability that the patient recovers is 0.8; otherwise it is 0.1. Given that the patient recovers, find the probability that a patient takes the drug.	
9 $f(x) = \ln x + x - 2$. Use the Newton-Raphson method with $x_0 = 3$ to find x_1 and x_2, giving your answer to 3 decimal places.	
10 A curve has parametric equations $x = t - 3$, $y = 3t^2 + 5$. Find a Cartesian equation of the curve.	