Day 259	A Level Maths: C Tier 10-a-day
1 Solve $\|x + 2\| < 1$.	
2 X ~ B(20, 0.25). Find E(X) and Var(X).	
3 Find the gradient of the curve $y = (3x + 2)^4$ at the point where $x = 1$.	
4 A particle moving in a straight line with constant acceleration 4 m s^{-2} travels 243 m in 9 s. Find its initial speed.	
5 Solve $16^x = 8$.	

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6 Find $\int \sin(2x + 1)\, dx$.	
7 Two forces $(\mathbf{i} - 3\mathbf{j})$ N and $(5\mathbf{i} + 5\mathbf{j})$ N act on a particle of mass 2 kg. No other horizontal forces act. Find the acceleration of the particle as a vector in terms of $\mathbf{i}$ and $\mathbf{j}$.	
8 Solve the simultaneous equations: $y = x^2 - 2x - 2$, $y = x - 2$.	
9 8 pairs of data on daily mean temperature and sunshine hours have $r = 0.53$. Test, at the 5% significance level, for evidence of positive correlation. The critical value is 0.6215.	
10 θ is small and measured in radians. Use the small angle approximations to find an approximation for $\cos\theta + \theta \sin 6\theta$.	