Day 214	A Level Maths: C Tier 10-a-day
1 Solve $x^2 - 6x + 5 \leq 0$.	
2 P(A) = 0.2, P(B) = 0.5 and P(A ∩ B) = 0.18. (a) Find P(A | B). (b) Are A and B independent? Give a reason.	
3 Find the exact value, in radians, of (a) $\arccos(-\frac{1}{2})$ (b) $\arccos(\frac{1}{2})$	
4 The circle $(x - 2)^2 + y^2 = 13$ passes through P(4, 3). Find the gradient of the tangent to the circle at P.	
5 A stone is thrown vertically upwards with speed 39.2 m s^{-1}. Take g = 9.8 m s^{-2}. (a) Find the time taken to reach its greatest height. (b) Find the greatest height reached.	

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6 $f(x) = x^3 - x - 6$. Use the Newton-Raphson method with $x_0 = 2$ to find x_1 and x_2, giving your answer to 3 decimal places.	
7 $X \sim B(10, p)$. H_0: $p = 0.6$, H_1: $p < 0.6$. Find the critical region for a test at the 1% significance level.	
8 The line $y = 4x + k$ is a tangent to the curve $y = x^2 + 2x + 4$. Find the value of k.	
9 A line has equation $\mathbf{r} = \begin{pmatrix} 2 \\ -2 \\ -1 \end{pmatrix} + t\begin{pmatrix} 3 \\ 3 \\ -1 \end{pmatrix}$. Show that the point $(-4, -8, 1)$ lies on the line.	
10 Two forces $(-4\mathbf{i} - \mathbf{j})$ N and $(16\mathbf{i} + 5\mathbf{j})$ N act on a particle of mass 4 kg. No other horizontal forces act. Find the acceleration of the particle as a vector in terms of $\mathbf{i}$ and $\mathbf{j}$.	