Day 3	A Level Maths: C Tier 10-a-day
1 Solve $\tan x = -3.00$ for $0° \leq x \leq 360°$. Give your answers to 1 decimal place.	
2 Write $-2x^2 - 4x$ in the form $a(x + p)^2 + q$.	
3 A cricket ball is projected vertically upwards with speed 21 m s^{-1} from ground level. Taking $g = 9.8$ m s^{-2}, find the maximum height it reaches above the ground.	
4 The curve $y = 4x - x^2$ and the line $y = 1x$ meet at the origin and at P. Find the area enclosed between them.	
5 The curve $y = x^2 - 4x + 3$ is translated by the vector $\begin{pmatrix}1\\4\end{pmatrix}$. Find the equation of the new curve, giving your answer in the form $y = ax^2 + bx + c$.	

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6 $X \sim N(120, 3^2)$ and $P(120 < X < 126) = 0.075$. Find $P(X > 126)$.	
7 A particle moves in a straight line. Its velocity at time t seconds ($0 \leq t \leq 2$) is $v = (-4t^2 + 8t)$ m s^{-1}. Find the maximum velocity and the time at which it occurs.	
8 Use the substitution $u = x^2 + 3$ to find $\int 4x(x^2 + 3)^4 \, dx$.	
9 The probability that a machine is set up wrongly is 0.4. If so, the probability that an item is faulty is 0.6; otherwise it is 0.4. Given that an item is faulty, find the probability that a machine is set up wrongly.	
10 Expand $(1 + 3x)^{-1}$ in ascending powers of x up to and including the term in x^2. State the range of values of x for which the expansion is valid.	