Day 206	A Level Maths: C Tier 10-a-day
1 A particle moves in a straight line. Its velocity at time t seconds is $v = (t^2 - 10t + 24)$ m s^{-1}. (a) Find the times when the particle is at rest. (b) Find its acceleration at the first of these times.	
2 A circle has centre (5, 5) and passes through the point (2, 4). Find the equation of the circle.	
3 Find $\int \sin(2x + 5)\, dx$.	
4 A particle moves in a straight line. Its displacement from O at time t seconds is s metres, where $s = 2t^3 - 3t^2 + 4t + 2$. Find its velocity when $t = 2$.	
5 Express $\frac{4x + 7}{(x + 2)(x + 1)}$ in the form $\frac{A}{x + 2} + \frac{B}{x + 1}$. Find the values of A and B.	

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6 $X \sim B(20, p)$. H_0: $p = 0.5$, H_1: $p > 0.5$. In a sample, $x = 14$. It is given that $P(X \geq 14) = 0.0577$. Test H_0 at the 5% significance level.	
7 A sector has radius 5 cm and area 6.25 cm^2. Find the angle of the sector in radians and the arc length.	
8 A circle has equation $(x - 4)^2 + (y + 2)^2 = 64$. Determine whether the point $P(-1, 0)$ is inside, outside or on the circle.	
9 $X \sim B(15, p)$. H_0: $p = 0.4$, H_1: $p > 0.4$. Find the critical region for a test at the 1% significance level.	
10 Prove by contradiction that there are no integers x and y such that $20x + 15y = 81$.	