Day 356	A Level Maths: C Tier 10-a-day
1 Simplify $3 - 3\sin^2 x$.	
2 A and B are mutually exclusive, with P(A) = 0.2 and P(B) = 0.55. (a) Find P(A ∪ B). (b) Find the probability that neither A nor B happens.	
3 Find the sum of the first 28 terms of the series $6 + 10 + 14 + 18 + ...$	
4 A particle of mass 2 kg changes its speed from 4 m s^{-1} to 9 m s^{-1}. Find the increase in its kinetic energy.	
5 Express $\frac{3x + 2}{(x + 1)(x + 2)}$ in the form $\frac{A}{x + 1} + \frac{B}{x + 2}$. Find the values of A and B.	

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6 Divide $f(x) = x^4 + 3x^3 + x^2 - 11x - 1$ by $(x - 1)$. Find the quotient and the remainder.	
7 A population is $N(\mu, 5^2)$. H_0: $\mu = 110$, H_1: $\mu \neq 110$. A sample of 9 has mean $\bar{x} = 114.33$. Test at the 5% level. Critical value: $z = \pm 1.96$.	
8 The line $y = -4x + k$ is a tangent to the curve $y = x^2 - 8x - 2$. Find the value of k.	
9 The table shows values of $y = f(x)$. x: 0 0.5 1 1.5 2 y: 1.7 3.5 4.9 5.2 3.8 Use the trapezium rule to estimate the area under the curve between $x = 0$ and $x = 2$.	
10 A particle starts from rest and moves in a straight line with constant acceleration 1.5 m s^{-2}. It travels 48 m. Find the time taken.	