Day 267	A Level Maths: C Tier 10-a-day
1 The line $y = -3x + k$ is a tangent to the curve $y = x^2 - 9x$. Find the value of k.	
2 A boat moves in a straight line with constant acceleration 1.5 m s^{-2}. Its initial speed is 6 m s^{-1}. Find the distance travelled in 3 s.	
3 Simplify $\sqrt{9x^4} \times 3x^4$.	
4 A particle moves in a straight line. Its velocity at time t seconds is $v = (t^2 - 5t + 4)$ m s^{-1}. (a) Find the times when the particle is at rest. (b) Find its acceleration at the first of these times.	
5 By writing 75° as 45° + 30°, find the exact value of cos 75°.	

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6 X is the height of a student chosen at random from a school. Can X be modelled by a binomial distribution? Give a reason.	
7 A curve has equation $x^2 + xy = 3$. Find dy/dx in terms of x and y, and hence the gradient at (1, 2).	
8 The probability that a machine is set up wrongly is 0.5. If so, the probability that an item is faulty is 0.5; otherwise it is 0.2. Given that an item is faulty, find the probability that a machine is set up wrongly.	
9 A sector has radius 5 cm and area 21.9 cm^2. Find the angle of the sector in radians and the arc length.	
10 The nth term of an arithmetic sequence is 3n + 1. Find the smallest n for which the term exceeds 200.	