Day 159	A Level Maths: C Tier 10-a-day
1 Solve $3 \ln x = 6$. Give your answer to 3 significant figures.	
2 A sequence is defined by $u_{n+2} = u_{n+1} + u_n$, with $u_1 = 4$ and $u_2 = 1$. Find u_6.	
3 Find the exact value, in radians, of (a) $\arcsin(\frac{1}{2})$ (b) $\arcsin(-1)$	
4 A circle has equation $(x - 2)^2 + (y - 4)^2 = 9$. Determine whether the point P(8, −8) is inside, outside or on the circle.	
5 $a = 3\mathbf{j} + 4\mathbf{k}$ and $b = -3\mathbf{i} - \mathbf{j} - 3\mathbf{k}$. Find the angle between a and b, to 1 decimal place.	

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6 The continuous random variable X has probability density function f(x) = kx for $0 \leq x \leq 2$, and 0 otherwise. Find the value of k.	
7 A block of mass 10 kg is pulled along rough horizontal ground by a horizontal force of 64.2 N. The coefficient of friction is 0.4. Take g = 9.8 m s^{-2}. Find the acceleration.	
8 The line $y = -x + k$ is a tangent to the curve $y = x^2 - 7x - 3$. Find the value of k.	
9 X ~ B(100, 0.4). Use a normal approximation to find $P(X \geq 38)$, to 3 s.f.	
10 A ball is projected from level ground with velocity $(14\mathbf{i} + 19.6\mathbf{j})$ m s^{-1} ($\mathbf{i}$ horizontal, $\mathbf{j}$ vertically up). Take g = 9.8 m s^{-2}. (a) Find the time of flight. (b) Find the greatest height reached.	