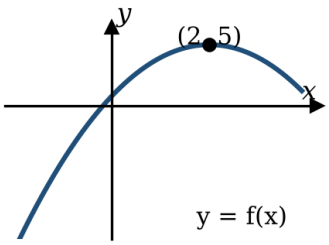
Day 314	A Level Maths: C Tier 10-a-day
1 A cyclist moving in a straight line increases its speed from 3 m s^{-1} to 36 m s^{-1} with constant acceleration 3 m s^{-2}. Find the time taken.	
2 A circle has equation $x^2 + y^2 + 6x + 8y - 11 = 0$. Find the centre and the radius of the circle.	
3 Find $\int \sin(3x + 2)\, dx$.	
4 The diagram shows the curve y = f(x). The maximum point is shown. Write down the coordinates of the maximum point on the curve with equation (a) y = f(2x) (b) y = −f(x) 	
5 A string pulls a box with a force of 20 N at an angle of 30° above the horizontal. Find the horizontal and vertical components of the force, to 3 s.f.	

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6 The probability that a patient takes the drug is 0.6. If so, the probability that the patient recovers is 0.5; otherwise it is 0.1. Given that the patient recovers, find the probability that a patient takes the drug.	
7 A line has equation $\mathbf{r} = \begin{pmatrix} 3 \\ -3 \\ 1 \end{pmatrix} + t\begin{pmatrix} 2 \\ 1 \\ 2 \end{pmatrix}$. Find the coordinates of the point on the line where $t = -1$.	
8 $X \sim B(100, 0.4)$. Use a normal approximation to find $P(X \leq 40)$, to 3 s.f.	
9 An arithmetic sequence begins 7, 10, 13, 16, ... Find (a) an expression for the nth term, (b) the 15th term.	
10 $f(x) = \ln x + x - 2$. Use the Newton-Raphson method with $x_0 = 3$ to find x_1, giving your answer to 3 decimal places.	