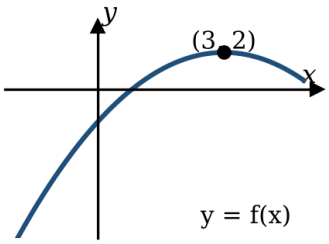
Day 252	A Level Maths: C Tier 10-a-day

1 Solve $\log_5 (3x + 2) = 3$.

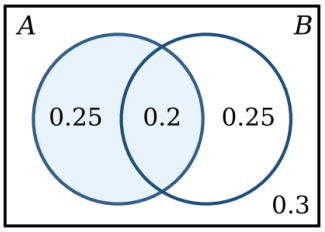
2 A particle of mass 10 kg hangs from a light string and is raised vertically with acceleration 2 m s^{-2}.
Taking g = 9.8 m s^{-2}, find the tension.

3 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(x) − 1 (b) y = f(x + 1)



4 $y = x^3 - 12x$.
Find the coordinates of the stationary points and determine their nature.

5 The Venn diagram shows probabilities for events A and B.
Find P(A | B).



Day 252	A Level Maths: C Tier 10-a-day
6 $a = -\mathbf{i} + 3\mathbf{j} + \mathbf{k}$ and $b = 2\mathbf{k}$. Find the angle between a and b, to 1 decimal place.	
7 The curve $y = x^2 - 2x$ is translated by the vector $\begin{pmatrix}1\\2\end{pmatrix}$. Find the equation of the new curve, giving your answer in the form $y = ax^2 + bx + c$.	
8 The continuous random variable X has probability density function $f(x) = kx^3$ for $0 \leq x \leq 2$, and 0 otherwise. Find the value of k.	
9 Find the sum of the first 9 terms of the series $-4 + 3 + 10 + 17 + ...$	
10 A particle moves in a straight line with constant acceleration. Its speed increases from 2 m s^{-1} to 10 m s^{-1} as it travels 19.2 m. Find the acceleration.	