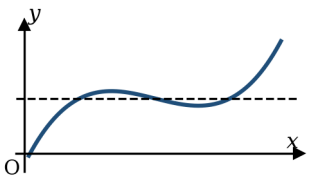
Day 41	IGCSE 10-a-day
1 A flight leaves London at 16:50 (London time). It takes 6 hours 30 minutes. When it is 12:00 in London it is 20:00 in Tokyo. At what time, in Tokyo time, does the flight land? Say if it is on a different day.	
2 The curve $y = 2x^3 - 3x^2 - 12x + 4$ has two stationary points, A and B. Work out the vertical distance between A and B.	
3 6 workers can build a wall in 18 days. After 5 days, 3 of the workers leave. The rest carry on working at the same rate. How many more days does it take to finish?	
4 $f(x) = \sqrt{x + 6} + 2$. (a) State the largest possible domain of f. (b) State the range of f for this domain.	
5 Two numbers x and y have a sum of 18. Find the least possible value of $x^2 + y^2$, showing that it is the least.	

Day 41 **IGCSE 10-a-day**

6 Solve the simultaneous equations
$y = x^2 - 3x + 6$
$y = -9x + 1$

7 $f(x) = x^3 + x^2 + x + 2$
The graph of $y = f(x)$ is transformed. Find the equation of the graph after it is
(a) stretched parallel to the y-axis with scale factor 3
(b) translated by the vector $\begin{pmatrix} 1 \\ -5 \end{pmatrix}$

8 The diagram shows a sketch of the curve $y = 2x^3 - 18x^2 + 48x - 6$ and the line $y = k$.
The line meets the curve at three different points.
Find the range of possible values of k.



9 Show that $3^{n+2} - 3^n$ is a multiple of 8 for all integer values of n.

10 OAB is a triangle. OA = **a** and OB = **b**.
M is on OA with OM : MA = 1 : 3. N is on OB with ON : NB = 2 : 1. AN and BM intersect at X.
(a) Find BM in terms of **a** and **b**.
(b) Find OX in terms of **a** and **b**.
The diagram is not drawn accurately.

