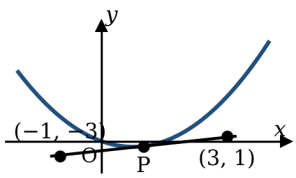
Day 115	IGCSE 10-a-day
1 Show that $\sqrt{19 + 8\sqrt{3}} = 4 + \sqrt{3}$	
2 The number m is 45.6 correct to 3 significant figures. Write down the error interval for m.	
3 The diagram shows part of the curve $y = 2x^2 - 3x$. The line shown is the tangent to the curve at the point P. (Not drawn accurately.) (a) Use the two marked points on the tangent to work out its gradient. (b) Use differentiation to find the x coordinate of P. 	
4 Simplify fully $\frac{4x^2 - 64}{x^2 - 5x + 4}$	
5 The curve $y = 2x^3 + 12x^2 + 6x - 5$ has gradient -12 at two points. Find the x coordinates of these points.	

Day 115	IGCSE 10-a-day
6 There are 200 insects in a sample. The number of insects is multiplied by 3 every day. After how many days will there first be more than 100,000 insects?	
7 The curve $y = x^3 + ax^2 + bx + 4$ has stationary points at $x = -3$ and $x = -1$. Find the values of a and b.	
8 A solid metal sphere of radius 6 cm is melted down and recast into a solid cylinder of radius 8 cm. Work out the height of the cylinder. The volume of a sphere of radius r is $\frac{4}{3}\pi r^3$.	
9 $\mathbf{OA} = 3\mathbf{b}$, $\mathbf{OB} = -\mathbf{a} + 7\mathbf{b}$ and $\mathbf{OC} = -2\mathbf{a} + 11\mathbf{b}$. Show that A, B and C lie on a straight line.	
10 Expand and simplify $(2x - 3)(x - 5)(x + 5)$	