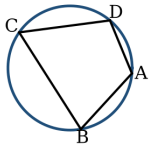
Day 118	IGCSE 10-a-day

1 $f(x) = 3x^2 + 4x - 7$
(a) Find $f'(x)$.
(b) Work out the value of $f'(-2)$.

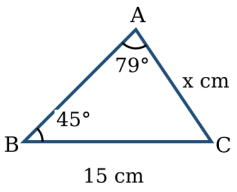
2 The height of a tower is 990 m, correct to 2 significant figures.
Write down the error interval for the height of a tower, using h.

3 $\mathbf{p} = \begin{pmatrix} -3 \\ -1 \end{pmatrix}$, $\mathbf{q} = \begin{pmatrix} -5 \\ 4 \end{pmatrix}$ and $\mathbf{r} = \begin{pmatrix} 1 \\ -6 \end{pmatrix}$.
Work out $\mathbf{p} + 2\mathbf{q} - \mathbf{r}$.

4 A, B, C and D are points on a circle. Angle DAB = $(4x + 20)°$, angle BCD = $(2x - 14)°$ and angle ABC = $(2x)°$.
(a) Work out the value of x.
(b) Work out the size of angle ADC.
The diagram is not drawn accurately.



5 A curve has equation $y = -2x^{3/2} + 4\sqrt{x}$.
Find the equation of the tangent to the curve at the point where x = 9.

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6 The diagram shows triangle ABC. (Calculator) Work out the length of AC. Give your answer correct to 1 decimal place. The diagram is not drawn accurately.  	
7 The curve $y = 2x^3 + 3x^2 - 30x + 2$ has gradient 6 at two points. Find the coordinates of these points.	
8 £8,000 is invested for 3 years at r% per year compound interest. At the end of 3 years the investment is worth £8,489.66. Work out the value of r. (Calculator)	
9 Rhys invested £16,500 in a savings account for 2 years. Compound interest was paid at a fixed rate per year. At the end of the 2 years the account held £18,191.25. Work out the annual rate of interest. (Calculator)	
10 The line $y = kx - 5$ is a tangent to the curve $y = x^2 - 2$. Find the possible values of k. Give any surds in their simplest form.	