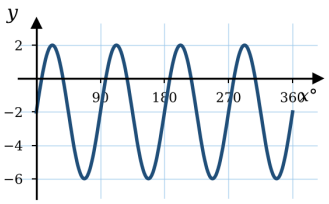
Day 169 **IGCSE 10-a-day**

1 A curve has equation $y = -3x^2 + \frac{3}{x}$.

Find the equation of the tangent to the curve at the point where $x = 2$.

2 A flight leaves London at 14:05 (London time).
It takes 12 hours 35 minutes.
When it is 12:00 in London it is 04:00 in Los Angeles.
At what time, in Los Angeles time, does the flight land? Say if it is on a different day.

3 The diagram shows the graph of $y = a \sin bx° + c$ for $0 \leq x \leq 360$.
a, b and c are integers.
Find the values of a, b and c.



4 Simplify fully $\frac{x^2 - 49}{x^2 + x} \div \frac{x^2 - 4x - 21}{x}$

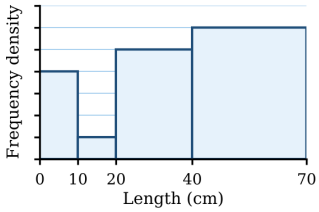
5 $y = -3x^4 + x^2 + 2x + 7$
The curve crosses the y-axis at the point A.
Work out the coordinates of A and the gradient of the curve at A.

Day 169 **IGCSE 10-a-day**

6 Triangle ABC has AB = 11 cm and BC = 20 cm.
The area of triangle ABC is $55\sqrt{3}$ cm^2.
Angle ABC is acute.
Work out the size of angle ABC.
Do not use a calculator.

7 $A = \begin{pmatrix} -1 & -2 \\ 0 & -1 \end{pmatrix}$ and $B = \begin{pmatrix} 9 & 2 \\ 3 & 2 \end{pmatrix}$.
AM = B, where M is a 2 × 2 matrix.
Find M.

8 The histogram shows the lengths of leaves collected from a tree.
360 of them had a length between 40 and 70 cm.
(a) How many had a length between 20 and 40 cm?
(b) How many leaves are there in total?



9 A particle moves in a straight line. After t seconds, its displacement from a fixed point O is s metres, where
$s = -t^3 + 9t^2$ for $t \geq 0$
Find the greatest speed of the particle, and the value of t at which it occurs.

10 The price of a tablet is increased by 10%.
Later the new price is reduced by 40% in a sale.
The sale price is £99.
Work out the price before the increase.
(Calculator)