Day 296 **IGCSE 10-a-day**

1 $A = \begin{pmatrix} -4 & 1 \\ -2 & 0 \end{pmatrix}$ and $B = \begin{pmatrix} 5 \\ 3 \end{pmatrix}$.

(a) Write down the order of matrix A.

(b) Work out AB.

2 The curve $y = x^3 + x^2 - 2x + 2$ crosses the y-axis at the point A.

The tangent to the curve at A meets the x-axis at B.

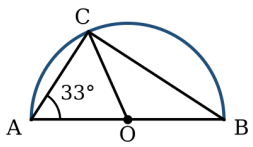
Find the coordinates of B.

3 AB is a diameter of a circle, centre O. C is a point on the circle. Angle BAC = 33°.

(a) Work out the size of angle ACB.

(b) Work out the size of angle COB.

The diagram is not drawn accurately.



4 The function $f(x) = x^2 + 2x + 4$ is increasing when $x > k$.

Find the value of k.

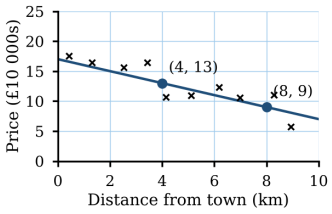
5 A laptop is bought for £8,000.

Its value falls by 25% each year.

Work out its value after 3 years. (Calculator)

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6 The scatter graph shows distance from town (x) and price (y).
The equation of the line of best fit is $y = -x + 17$.
(a) Estimate y when x = 9.
(b) Explain why an estimate of y when x = 15 may be unreliable.



7 $f(x) = \frac{8}{x-3} - 1$
(a) Find $f^{-1}(x)$.
(b) Find the value of $f^{-1}(-2)$.

8 $f(x) = 4x^{1/2} - 6x^{-1/2}$
Find $f'(x)$ and work out the value of $f'(1)$.

9 Solve $4 \sin x° + 7 = 3$ for $0 \leq x \leq 360$

10 Simplify $\frac{3}{3+\sqrt{3}} + \frac{1}{3-\sqrt{3}}$
Give your answer with a rational denominator.