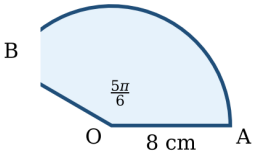
Day 242	A Level Maths: C Tier 10-a-day

1 The diagram shows sector OAB of a circle. Find, in terms of π, (a) the arc length AB, (b) the area of the sector.



2 The heights in cm for two groups: Group A has mean 75, standard deviation 5; Group B has mean 70, standard deviation 19.
Compare the two sets of data.

3 A particle has initial velocity $(6\mathbf{i} + 4\mathbf{j})$ m s^{-1} and constant acceleration $(-\mathbf{i} + 4\mathbf{j})$ m s^{-2}.
Find its velocity after 4 s.

4 Solve $|x - 2| < 2$.

5 X ~ B(n, p) has mean 6.4 and variance 3.84.
Find n and p.

Day 242 **A Level Maths: C Tier 10-a-day**

6 Sketch $y = \frac{-6}{x + 3} - 4$.

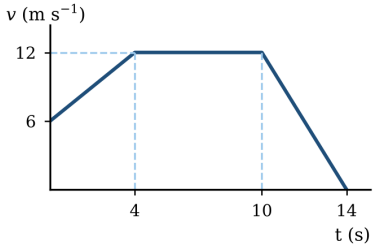
Write down the equations of the asymptotes and the coordinates where the curve meets the axes.

7 The graph shows the velocity of a skater.

(a) Find the acceleration in the first 4 s.

(b) Find the deceleration in the last 4 s.

(c) Find the total distance travelled.



8 $\mathbf{a} = \begin{pmatrix} 2 \\ 1 \end{pmatrix}$ and $\mathbf{b} = \begin{pmatrix} -4 \\ -2 \end{pmatrix}$.

Show that a and b are parallel and find the ratio $|\mathbf{b}| : |\mathbf{a}|$.

9 Rationalise the denominator of $\frac{3}{3 + \sqrt{7}}$.

Write your answer in the form $p + q\sqrt{7}$.

10 $\frac{-x - 7}{(x + 4)(x + 1)} \equiv \frac{A}{x + 4} + \frac{B}{x + 1}$.

Find A and B, and hence find $\int \frac{-x - 7}{(x + 4)(x + 1)}\, dx$.