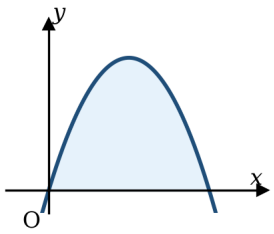
Day 307	A Level Maths: C Tier 10-a-day

1 Evaluate $25^{\frac{1}{2}}$.

2 Find
(a) $\int 9 \cos 3x \, dx$
(b) $\int 9 e^{3x} \, dx$

3 For 7 data pairs, with hours of revision from 8 to 16, the regression line is $E = 4 + 9h$. Estimate exam score when $h = 24$ and comment on the reliability.

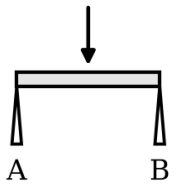
4 The diagram shows the curve $y = 3x(3 - x)$. Find the area of the shaded region, between the curve and the x-axis.



5 $f(x) = 2x^3 - 18x^2 + 46x - 30$
(a) Show that $(x - 1)$ is a factor of f(x).
(b) Factorise f(x) completely.

Day 307 **A Level Maths: C Tier 10-a-day**

6 A uniform beam AB of mass 30 kg and length 2 m rests horizontally on supports at A and B. A load of mass 25 kg is placed on the beam 1 m from A. Take g = 9.8 m s^{-2}. Find the reaction at B.



7 A company says that the probability a customer buys a ticket is 0.2.
A researcher thinks that the probability is different. Let p be the probability that customer buys a ticket.
Write down suitable hypotheses for a test on p.

8 The curve C has equation $y = x^3 + 4x^2 + 3x + 1$. C is reflected in the y-axis. Find the equation of the image.

9 Two cyclists start at the same time from points A and B, 153 m apart, and cycle directly towards each other at constant speeds of 10 m s^{-1} and 7 m s^{-1}. Find the time until they meet.

10 Solve $\sin x = -\frac{1}{2}$ for $0 \leq x \leq 2\pi$.
Give your answers in terms of π.