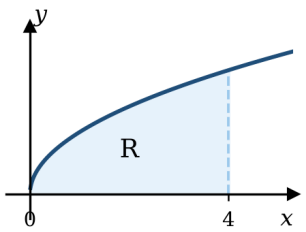
Day 297	A Level Maths: B Tier 10-a-day
1 A school has 80 students in Year 7, 56 in Year 8 and 80 in Year 9. A stratified sample of size 27 is taken. Find the number selected from each group.	
2 Solve $\|2x + 5\| = \|-x - 2\|$.	
3 A and B are mutually exclusive events with $P(A) = 0.25$ and $P(A \cup B) = 1$. (a) Find $P(B)$. (b) Find $P(A' \cap B')$.	
4 Solve $\tan 2x = 1.5$ for $0 \leq x \leq \pi$, giving answers to 3 significant figures.	
5 Prove that $(n + 5)^2 - (n - 5)^2$ is a multiple of 20 for all integer values of n.	

Day 297	A Level Maths: B Tier 10-a-day

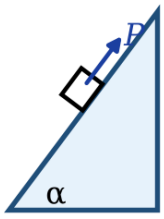
6 Given that $8\cos\theta + 15\sin\theta \equiv 17\cos(\theta - 61.9°)$,
solve $8\cos\theta + 15\sin\theta = -3.5$ for $0 \leq \theta \leq 360°$. (1 d.p.)

7 Prove that $x^2 - 8x + 20 > 0$ for all real values of x.

8 The region R is bounded by the curve $y = 2\sqrt{x}$, the x-axis
and the lines x = 0 and x = 4.
R is rotated through 360° about the x-axis. Find the exact volume generated.



9 A block of mass 10 kg is held on a rough plane ($\tan\alpha = \frac{4}{3}$, $\mu = 0.5$) by a force P N up the plane, as shown.
Take $g = 9.8$ m s^{-2}. The block is about to move up the plane. Find P.



10 A police car starts from rest and accelerates at 4 m s^{-2}. At that moment it is passed by a speeding van travelling at constant speed 16 m s^{-1}.
Find how long it takes to catch up, and the distance travelled.