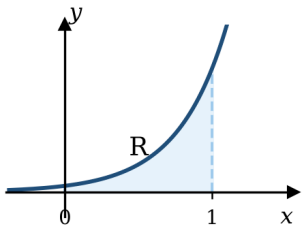
Day 250	A Level Maths: B Tier 10-a-day
1 Solve $2^x > 213$, giving your answer to 3 s.f.	
2 A drone moves with constant velocity $(18\mathbf{i} + 24\mathbf{j})$ m s^{-1}, where $\mathbf{i}$ and $\mathbf{j}$ are unit vectors east and north. Find its speed and the acute angle its direction makes with $\mathbf{i}$, to 1 d.p.	
3 Solve $\tan x = -\sqrt{3}$ for $0 \leq x \leq 360°$.	
4 A curve has parametric equations $x = t^2$, $y = 4t$, $t \in \mathbb{R}$. Find a Cartesian equation of the curve.	
5 A sledge of mass 4 kg is pulled across smooth horizontal ice by a rope with tension 26 N, inclined at α above the horizontal, where $\tan\alpha = \frac{5}{12}$. Take $g = 9.8$ m s^{-2}. Find (a) the acceleration of the sledge, (b) the normal reaction of the ice.	

Day 250 **A Level Maths: B Tier 10-a-day**

6 Line l_1 has equation $x - 2y = 0$ and line l_2 has equation $3x - 8y = -6$.
The lines meet at P. Find the area of the triangle formed by l_1, l_2 and the x-axis.

7 The region R is bounded by the curve $y = e^{3x}$, the x-axis
and the lines $x = 0$ and $x = 1$.
R is rotated through 360° about the x-axis. Find the exact volume generated.



8 7 values of x are coded using $y = \frac{(x - 20)}{5}$.
$\Sigma y = 6$ and $\Sigma y^2 = 210$.
Find the mean and standard deviation of x (3 s.f.).

9 Express $\frac{-x + 6}{(2x - 3)(x - 3)}$ in partial fractions.

10 The masses (kg) of parcels are normally distributed.
$P(X < 96) = 0.1587$ and $P(X > 104) = 0.1587$.
Find the mean and standard deviation (3 s.f.).