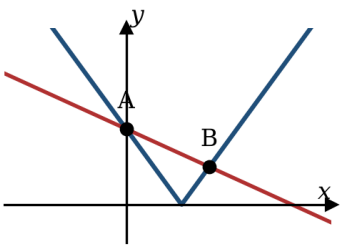
Day 88	A Level Maths: A Tier 10-a-day
1 A curve has parametric equations $x = 3t^2 + 5$, $y = 2t(t^2 - 4)$. Find the coordinates of the points where the curve meets the x-axis.	
2 Use the trapezium rule with 4 strips to estimate $\int_0^2 \sqrt{x^3 + 1}\, dx$, giving your answer to 3 s.f. State, with a reason, whether your estimate is an overestimate or an underestimate.	
3 A ball is projected from a point O on horizontal ground at angle α above the horizontal, $\tan\alpha = \frac{3}{4}$, and passes through A, 40 m horizontally from O and 10.4 m above the ground. Find the speed of projection. Take g = 9.8.	
4 The volume of a cube of edge x cm is increasing at 48 $cm^3 s^{-1}$. Find the rate of increase of its total surface area when x = 4.	
5 The diagram shows the graphs of $y = \|3x - 3\|$ and $y = -x + 3$. The graphs meet at A and B. Find the coordinates of A and B. 	

Day 88	A Level Maths: A Tier 10-a-day
6 Solve $\sin 2\theta = -\sqrt{2}\sin\theta$ for $-180° \leq \theta \leq 180°$.	
7 A uniform rod AB (4 kg, 2 m) is smoothly hinged at A to a vertical wall, with a 2 kg particle at B. A light string from B to the wall above A holds the rod horizontal, at angle θ to it, $\tan\theta = \frac{4}{3}$. Find (a) the tension, (b) the magnitude of the hinge force. Take g = 9.8. Give answers to 3 s.f. if not exact.	
8 The masses in grams of two groups: factory A has n = 27, mean 44, sd 9; factory B has n = 9, mean 20, sd 9. Find the mean and standard deviation of all 36 values (3 s.f. for the sd).	
9 Solve $3 \times 2^{2x} - 30 \times 2^{x} + 48 = 0$.	
10 P(A) = 0.45, P(B) = 0.5 and P(A ∩ B) = 0.05. Find (a) P(A ∪ B) (b) P(B | A) (c) P(A | B′)	