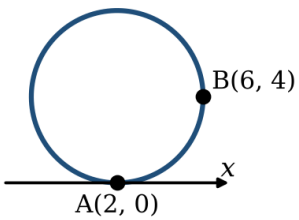
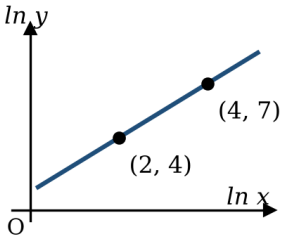
Day 219	A Level Maths: A Tier 10-a-day
1 A is (5, −5) and B is (1, 1). (a) Find the equation of the perpendicular bisector of AB, in the form ax + by = c. (b) The perpendicular bisector meets the x-axis at P. Find the area of triangle ABP.	
2 For small x (in radians), use the small angle approximations to find the value that $\frac{1 - \cos 3x}{x \sin x}$ approaches as $x \to 0$.	
3 Solve $25^{3x-1} = 5^{2x-2}$.	
4 A 6 kg box is pulled from rest along rough horizontal ground by a horizontal force of 19.44 N and moves 15 m in 10 s. Find (a) the coefficient of friction. The force is then removed; (b) find the further distance moved. Take g = 9.8. Give answers to 3 s.f. if not exact.	
5 The diagram shows a circle that touches the x-axis at A(2, 0) and passes through B(6, 4). Find the equation of the circle. 	

Day 219	A Level Maths: A Tier 10-a-day

6 A particle moves on the x-axis. At time t s its acceleration is $(6t - 6)$ m s^{-2}. When t = 0 it is at O with velocity -7 m s^{-1}. Find (a) its velocity when the acceleration is zero, (b) its displacement from O then.

7 The length of a plank is $N(60, 3^2)$. A plank is classed as 'special' if its length is more than 63. 12 planks are chosen at random. Find the probability that exactly 3 are special (3 s.f.).

8 The diagram shows the graph of ln y against ln x for $y = A x^n$.
Find the value of n and the exact value of A.



9 (a) Express $\frac{-2x - 7}{(x + 3)^2}$ in the form $\frac{A}{x + 3} + \frac{B}{(x + 3)^2}$.

(b) Hence find the exact value of $\int_0^3 \frac{-2x - 7}{(x + 3)^2}$ dx.

10 $X \sim B(36, p)$. H_0: $p = 0.4$ is tested against H_1: $p \neq 0.4$ at the 5% level.
(a) Find the critical region.
(b) Find the actual significance level of the test (3 s.f.).