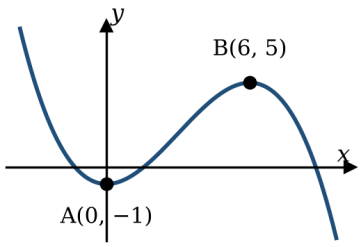
Day 201	A Level Maths: B Tier 10-a-day
1 Solve $-x^2 \geq -4$.	
2 A car of mass 1500 kg tows a trailer of mass 200 kg along a straight horizontal road by a light horizontal tow bar. The resistances are 400 N on the car and 250 N on the trailer. The engine's driving force is 1500 N. Find the acceleration and the tension in the tow bar.	
3 Regression line (x from 2 to 10): y = 3.2 + 0.8x. x is the advertising spend, y the weekly sales. (a) Interpret the gradient. (b) Estimate y when x = 15 and comment.	
4 Solve $2^x > 201$, giving your answer to 3 s.f.	
5 Find the term independent of x in the expansion of $(x^2 + \frac{3}{x})^9$.	

Day 201 **A Level Maths: B Tier 10-a-day**

6 Solve $3 \sin 2x = 2 \cos x$ for $0 \leq x \leq 360°$, giving answers to 1 d.p. where necessary.

7 The diagram shows the curve $y = f(x)$. A and B are the turning points. Find the turning points of:

(a) $y = f(\frac{x}{2})$ (b) $y = f(x) - 2$



8 A journey takes X minutes, normal with mean 40, s.d. 0.5.
Find k (3 s.f.): (a) $P(X < k) = 0.1$,
(b) $P(X > k) = 0.1$.

9 (a) Write $\frac{-5x - 16}{(x + 2)(x + 4)}$ in partial fractions.

(b) Hence evaluate $\int_0^4 \frac{-5x - 16}{(x + 2)(x + 4)}\,dx$, giving the answer as a single logarithm.

10 A suitcase of mass 20 kg is dragged at constant speed along rough horizontal ground by a rope inclined at angle α above the horizontal, where $\cos \alpha = \frac{12}{13}$.

The coefficient of friction is 0.2. Take $g = 9.8$ m s^{-2}. Find the tension in the rope.