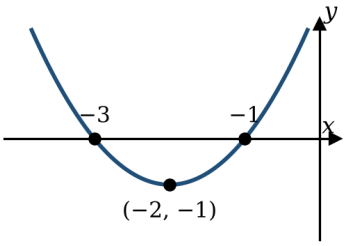
Day 28	A Level Maths: B Tier 10-a-day
1 $f(x) = 2x^3 + px^2 + qx - 2$. When f(x) is divided by $(x - 1)$ the remainder is 3, and when divided by $(x - 3)$ the remainder is 55. Find p and q.	
2 A car of mass 1000 kg moves along a horizontal road. The engine works at a constant rate of 50 kW. The resistance to motion is constant at 500 N. Find the acceleration when the speed is 25 m s^{-1}.	
3 The points A and B have coordinates $(-3, 1)$ and $(-4, -5)$. (a) Find the midpoint of AB. (b) Find the line AB as $ax + by + c = 0$, with integer a, b, c.	
4 10 values of x are coded using $y = \frac{(x - 200)}{5}$. $\Sigma y = 2$ and $\Sigma y^2 = 226$. Find the mean and standard deviation of x (3 s.f.).	
5 A uniform rod AB of length 4 m and mass 4 kg hangs horizontally from two vertical strings attached 1 m from A and 1 m from B. A particle of mass 1 kg is attached 1.5 m from A. Take g = 9.8 m s^{-2}. Find the tension in each string.	

Day 28 **A Level Maths: B Tier 10-a-day**

6 The diagram shows the curve y = f(x), a quadratic.
(a) Find the coordinates of the local maximum point of y = |f(x)|.
(b) How many solutions has |f(x)| = 1?



7 The variables x and y satisfy $y = Ae^{kx}$. A graph of ln y against x is a straight line through (0, 0.5) and (5, 3).
Find A to 3 s.f. and k.

8 The mass X g of a flour bag is normal with s.d. 15.
Given P(X > 95.3) = 0.05, find the mean (3 s.f.).

9 Solve $7^x < 82$, giving your answer to 3 s.f.

10 The diagram shows a sector OAB of a circle with centre O, radius 12 cm and angle 1.1 radians.
Find (a) the arc length AB, (b) the area of the sector.

