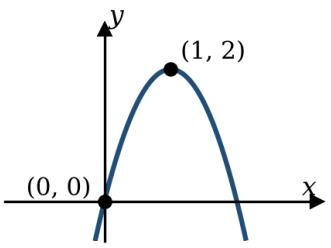
Day 205 **A Level Maths: C Tier 10-a-day**

1 The diagram shows a sketch of a quadratic curve.
Find its equation in the form $y = a(x - p)^2 + q$.



2 A systematic sample of 11 patients is taken from a numbered list of 66.
The first one selected is number 1. Find the number of the 8th one selected.

3 Sketch $y = (x + 5)(x + 2)(x - 4)$. Write down the coordinates of the points where the curve meets the axes.

4 θ is acute and $\sin\theta = \frac{15}{17}$.
Find the exact values of $\cos\theta$ and $\tan\theta$.

5 A particle of mass 8 kg slides from rest down a smooth plane inclined at angle α to the horizontal, where $\sin\alpha = \frac{1}{2}$. Take g = 9.8 m s^{-2}.
Find (a) its acceleration, (b) its speed after 4 s.

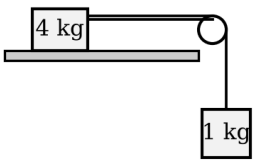
Day 205	A Level Maths: C Tier 10-a-day

6 Sketch $y = 2^x - 8$.
Write down the equation of the asymptote and the coordinates where the curve meets the axes.

7 Write down the exact values of
(a) cot 60° (b) cosec 210°

8 A population is N(μ, 3^2). H_0: $\mu = 35$, H_1: $\mu < 35$.
A sample of 9 has mean $\bar{x} = 32.3$.
Test at the 5% level. Critical value: $z = -1.645$.

9 A 4 kg particle on a smooth horizontal table is joined by a light string over a smooth pulley to a hanging 1 kg particle, as shown. The system is released from rest. Take g = 9.8 m s^{-2}. Find the tension.



10 $x_{n+1} = \ln(x_n + 3) + 1$, with $x_0 = 2$.
Find x_1, x_2 and x_3 to 3 decimal places.