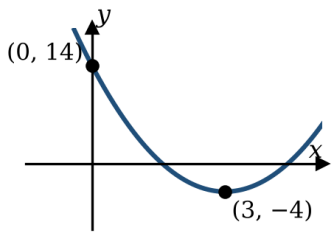
Day 347 **A Level Maths: C Tier 10-a-day**

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



2 Solve $\cos x = \frac{\sqrt{3}}{2}$ for $0° \leq x \leq 180°$.

3 Find the remainder when $-x^3 - x^2 - 2x + 3$ is divided by $(2x - 1)$.

4 A light plank rests on a pivot. A child of mass 45 kg sits 3 m from the pivot on one side.
Where must a child of mass 15 kg sit on the other side for the plank to balance horizontally?

5 For data set A, $r = -0.62$. For data set B, $r = -0.72$.
Which data set has the stronger linear correlation? Give a reason.

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6 An arithmetic series has first term 5 and common difference 6. Find the smallest n for which the sum of the first n terms exceeds 1000.	
7 Two forces $(8\mathbf{i} + 4\mathbf{j})$ N and $(-6\mathbf{i})$ N act on a particle of mass 2 kg. No other horizontal forces act. Find the acceleration of the particle as a vector in terms of $\mathbf{i}$ and $\mathbf{j}$.	
8 $\frac{-5x - 7}{(x + 2)(x + 1)} \equiv \frac{A}{x + 2} + \frac{B}{x + 1}$. Find A and B, and hence find $\int \frac{-5x - 7}{(x + 2)(x + 1)}\,dx$.	
9 X ~ B(50, 0.3). Use a normal approximation to find P(X ≥ 15), to 3 s.f.	
10 Use the trapezium rule with 4 strips to estimate $\int_0^3 \frac{1}{1 + x^2}\,dx$, giving your answer to 3 significant figures.	