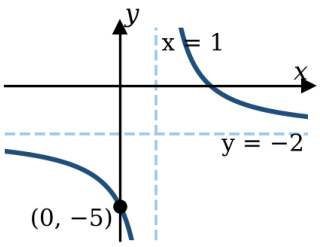
Day 127	A Level Maths: C Tier 10-a-day
1 Find the coefficient of x^3 in the expansion of $(4 + x)^8$.	
2 Find (a) $\int 12 \sin 4x \, dx$ (b) $\int 12 \cos 4x \, dx$	
3 X is the number of the 16 members of one family who have the flu, which spreads easily. Can X be modelled by a binomial distribution? Give a reason.	
4 A lift of mass 1000 kg is lowered by a vertical cable with constant acceleration 0.75 m s^{-2} downwards. Take g = 9.8 m s^{-2}. Find the tension in the cable.	
5 A circle has equation $(x - 1)^2 + (y - 3)^2 = 16$. Determine whether the point P(−6, −7) is inside, outside or on the circle.	

Day 127	A Level Maths: C Tier 10-a-day
6 $X \sim B(15, p)$. H_0: $p = 0.1$, H_1: $p \neq 0.1$. In a sample, $x = 5$. Test at the 10% significance level.	
7 A stone is projected from level ground with velocity $(6\mathbf{i} + 29.4\mathbf{j})$ m s^{-1} ($\mathbf{i}$ horizontal, $\mathbf{j}$ vertically up). Take $g = 9.8$ m s^{-2}. (a) Find the time of flight. (b) Find the greatest height reached.	
8 Solve $-\sin^2 x - \cos x + 1 = 0$ for $0° \leq x \leq 360°$.	
9 The diagram shows the graph of $y = \frac{k}{x - a} + c$ with its asymptotes. Find the values of a, c and k. 	
10 $f(x) = 20 \sin x + 21 \cos x + 6$. Write f(x) in the form $R \sin(x + \alpha) + 6$, with α in degrees to 1 d.p., and state the maximum value of f(x).	