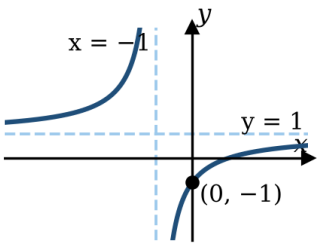
Day 312	A Level Maths: C Tier 10-a-day
1 Differentiate with respect to x: (a) 4 cos 2x (b) 4 sin 2x	
2 Three forces $(p\mathbf{i} + q\mathbf{j})$ N, $(-4\mathbf{i} + 5\mathbf{j})$ N and $(2\mathbf{i} + \mathbf{j})$ N act on a particle which is in equilibrium. $\mathbf{i}$ and $\mathbf{j}$ are perpendicular unit vectors. Find the values of p and q.	
3 Find the coefficient of x^2 in the expansion of $(3 - 2x)^6$.	
4 Of 130 people, 44 are women. 21 of the women and 48 of the men own a bike. One person is chosen at random. Given that the person is a woman, find the probability that they own a bike.	
5 A stone is thrown vertically downwards at 4 m s^{-1} from the top of a cliff and hits the sea after 2 s. Taking g = 9.8 m s^{-2}, find the height of the cliff.	

Day 312 **A Level Maths: C Tier 10-a-day**

6 By writing 15° as 45° − 30°, find the exact value of sin 15°.

7 The diagram shows the graph of $y = \frac{k}{x - a} + c$ with its asymptotes. Find the values of a, c and k.



8 $y = x^3 - 6x^2 + 1$.
Find the coordinates of the stationary points and determine their nature.

9 The line $y = -x + k$ is a tangent to the curve $y = x^2 - 3x + 4$.
Find the value of k.

10 $X \sim N(110, 3^2)$ and $P(110 < X < 116) = 0.09$.
Find $P(X > 116)$.