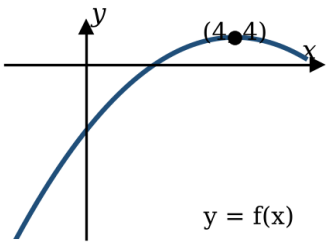
Day 225	A Level Maths: C Tier 10-a-day
1 Write down the exact values of (a) cot 315° (b) cosec 120°	
2 A car moving in a straight line has initial speed 2 m s^{-1} and constant acceleration 1 m s^{-2}. Find its speed after 5 s.	
3 The discrete random variable X has P(X = x) = k(x + 2) for x = 1, 2, 3, 4, 5. (a) Find the value of k. (b) Find P(X ≥ 3).	
4 Sketch $y = 2 \times 3^x - 54$. Write down the equation of the asymptote and the coordinates where the curve meets the axes.	
5 The continuous random variable X has probability density function f(x) = k(x + 3) for 0 ≤ x ≤ 4, and 0 otherwise. Find the value of k.	

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6 The diagram shows the curve y = f(x). The maximum point is shown. Write down the coordinates of the maximum point on the curve with equation
(a) $y = -f(x)$ (b) $y = 2f(x)$



7 The vector $\mathbf{p} = 7\mathbf{i} + 24\mathbf{j}$.
Find (a) $|\mathbf{p}|$, (b) the angle p makes with the positive x-axis, measured anticlockwise (1 d.p.).

8 A particle moves in a straight line. Its velocity at time t seconds ($0 \leq t \leq 4$) is $v = (-4t^2 + 16t)$ m s^{-1}. Find the maximum velocity and the time at which it occurs.

9 The curve $y = ab^x$ passes through (0, 3) and (3, 24).
Find the values of a and b.

10 Find the coefficient of x^2 in the expansion of $(1 + 3x)^6$.