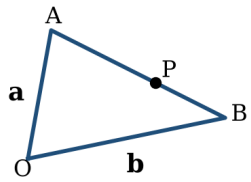
Day 236	A Level Maths: C Tier 10-a-day
1 Differentiate with respect to x: (a) $3 \sin 3x$ (b) $e^{3x} + \sin 3x$	
2 The line l has equation $y = \frac{4}{3}x + 1$. Find the equation of the line perpendicular to l that passes through $(-3, 1)$.	
3 A particle moves with constant velocity $(4\mathbf{i} + 3\mathbf{j})$ m s^{-1}. It is at the point with position vector $(-\mathbf{i} + 4\mathbf{j})$ m at t = 0. Find the time when its position vector is $(11\mathbf{i} + 13\mathbf{j})$ m.	
4 $f(x) = \frac{1}{x - 3} - 2$, $x \neq 3$. Find the range of f.	
5 $X \sim B(20, p)$. H_0: $p = 0.3$, H_1: $p \neq 0.3$. In a sample, x = 12. Test at the 10% significance level.	

Day 236 **A Level Maths: C Tier 10-a-day**

6 Solve $-x^2 + 5x + 6 \geq 0$.

7 In the diagram, OA = **a**, OB = **b**, and P lies on AB with AP : PB = 3 : 2.
Find AB and AP in terms of **a** and **b**.



8 The table summarises the number of goals scored in a game by 25 people.
Goals, x: 1, 2, 3, 4, 5
Frequency, f: 8, 3, 2, 3, 9
Find the mean.

9 A cyclist starts from rest and accelerates uniformly at 1.5 m s^{-2} for 10 s, then travels at constant speed for a further 10 s. Find the total distance travelled.

10 Given that $dy/dx = 2x^2$ and $y = 0$ when $x = 0$, find y in terms of x.