Day 191	A Level Maths: C Tier 10-a-day
1 A particle of mass 6 kg has acceleration 1 m s^{-2}. Find the magnitude of the resultant force acting on it.	
2 Find (a) $\int 4 \sec^2 2x \, dx$ (b) $\int 4 \sin 2x \, dx$	
3 Find the remainder when $-3x^3 - 5x^2 - x - 5$ is divided by $(2x - 2)$.	
4 In how many ways can a team of 2 be chosen from 11 students?	
5 Sketch $y = \frac{-1}{x - 3} - 4$. Write down the equations of the asymptotes and the coordinates where the curve meets the axes.	

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6 $f(x) = x^3 - 4x - 4$. Use the Newton-Raphson method with $x_0 = 2$ to find x_1, giving your answer to 3 decimal places.	
7 A researcher wants to find out the opinions of the staff at a company. Give one advantage and one disadvantage of using systematic sampling.	
8 A crate is on the point of sliding down a rough plane inclined at α to the horizontal, where $\tan\alpha = \frac{7}{24}$. Find the coefficient of friction.	
9 $x_{n+1} = \frac{5}{x_n^2 + 1} + 1$, with $x_0 = 1$. Find x_1, x_2 and x_3 to 3 decimal places.	
10 A curve has parametric equations $x = 2t + 4$, $y = 2t^2 - 2$. The point P has y-coordinate 6 and positive t. Find the coordinates of P.	