Day 76	A Level Maths: B Tier 10-a-day

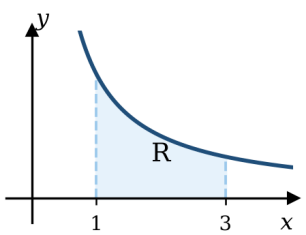
1 Solve $0 < 2x - 5 \leq 13$.

2 A lorry of mass 1000 kg moves along a straight horizontal road. The engine produces a driving force of 3500 N and the resistance to motion is 400 N.
Find the acceleration of the lorry.

3 Given that $\tan\theta = 1$ and θ is acute,
find the exact value of $\operatorname{cosec}\theta$.

4 A particle of mass 5 kg is acted on by forces $(2\mathbf{i} + 5\mathbf{j})$ N and $\mathbf{P}$ N only. Its acceleration is $(3\mathbf{i} + 4\mathbf{j})$ m s^{-2}.
Find $\mathbf{P}$, and its magnitude to 3 significant figures.

5 The region R is bounded by the curve $y = \frac{1}{x}$,
the x-axis
and the lines $x = 1$ and $x = 3$.
R is rotated through 360° about the x-axis. Find the exact volume generated.



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6 Find the coefficient of x^3 in the expansion of $(2 + x)(1 - 3x)^4$.	
7 Solve $e^{2x} + 2e^x - 8 = 0$, giving any answers as exact values.	
8 Solve the equation $3^{2x} - 12 \times 3^x + 27 = 0$.	
9 X has a binomial distribution with mean 4.8 and variance 1.92. (a) Find n and p. (b) Find P(X = 4) to 3 significant figures.	
10 The scores on a test are normally distributed. P(X < 32) = 0.0668 and P(X > 62) = 0.1587. Find the mean and standard deviation (3 s.f.).	