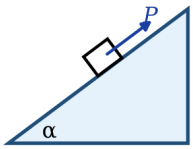
Day 70	A Level Maths: B Tier 10-a-day
1 Express $\frac{8x - 19}{(2x - 3)(x - 5)}$ in partial fractions.	
2 Given that $y = x^2e^{-x}$, find $\frac{dy}{dx}$, and its value when $x = 0$.	
3 X ~ Po(6), modelling the number of calls to a helpline per minute. Find, to 3 significant figures, (a) $P(X \leq 5)$ (b) $P(X = 5)$	
4 Given that $\sin A = \frac{12}{13}$ and $\sin B = \frac{20}{29}$, where A and B are acute, find the exact value of $\cos(A - B)$.	
5 $f(x) = x^2 - 6x + 3$ for $x \geq 3$. Find $f^{-1}(x)$ and state its domain.	

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6 A block of mass 4 kg is held on a rough plane ($\tan\alpha = \frac{3}{4}$, $\mu = 0.5$) by a force P N up the plane, as shown.
Take $g = 9.8$ m s^{-2}. The block is about to move down the plane. Find P.



7 Find the coefficient of x^3 in the expansion of $(3 + 4x)(3 - 2x)^5$.

8 Solve $\cos 2x = 0.3$ for $0 \leq x \leq 360°$, giving answers to 1 d.p.

9 The length X cm of a metal rod is normal with s.d. 1.5.
Given P(X > 72.1) = 0.025, find the mean (3 s.f.).

10 A lift travels between floors in 50 s. The speed-time graph is a trapezium, with the maximum speed V m s^{-1} held from t = 20 to t = 40.
The floors are 875 m apart. Find V, and the deceleration in the final stage.

