Day 320	A Level Maths: B Tier 10-a-day

1 6 values of x are coded using $y = \frac{(x - 20)}{2}$.

$\Sigma y = 10$ and $\Sigma y^2 = 94$.

Find the mean and standard deviation of x (3 s.f.).

2 $f(x) = -4x - 1$ for $-3 < x < 3$.

Find the range of f.

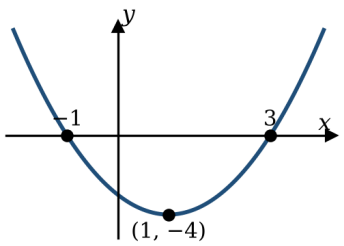
3 Find (a) $\int e^{4x}\, dx$,

(b) the exact value of $\int_0^1 e^{4x}\, dx$.

4 The diagram shows the curve y = f(x), a quadratic.

(a) Find the coordinates of the local maximum point of y = |f(x)|.

(b) How many solutions has |f(x)| = 4?



5 The time, X minutes, to complete a task is normally distributed with mean 50 and s.d. 4. A random sample of 16 is taken. Find the probability that the mean time is more than 51 (3 s.f.).

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6 Given that $\sin A = \frac{4}{5}$ and $\sin B = \frac{15}{17}$, where A and B are acute, find the exact value of cos(A + B).	
7 Line l_1 has equation $2x - y = 4$ and line l_2 has equation $4x - 5y = -4$. The lines meet at P. Find the area of the triangle formed by l_1, l_2 and the x-axis.	
8 Solve $2\cot^2 x - \operatorname{cosec} x - 4 = 0$ for $0 \leq x \leq 360°$, giving answers to 1 d.p.	
9 A particle of mass 3 kg is acted on by forces $(-2\mathbf{i} - 3\mathbf{j})$ N and $\mathbf{P}$ N only. Its acceleration is $(4\mathbf{i} + 4\mathbf{j})$ m s^{-2}. Find $\mathbf{P}$, and its magnitude to 3 significant figures.	
10 A golf ball is projected from ground level with initial velocity components 20 m s^{-1} horizontally and 29.4 m s^{-1} vertically upwards. Take g = 9.8 m s^{-2}. Find (a) the greatest height, (b) the speed at the greatest height.	