Day 279	A Level Maths: C Tier 10-a-day
1 Simplify $\sqrt{18} + \sqrt{8}$, giving your answer in the form $p\sqrt{2}$.	
2 The journey times in minutes for two groups: Route A has mean 67, standard deviation 15; Route B has mean 80, standard deviation 9. Compare the two sets of data.	
3 $x_{n+1} = \frac{2}{x_n^2 + 1} + 1$, with $x_0 = 2$. Find x_1, x_2 and x_3 to 3 decimal places.	
4 Divide $f(x) = x^3 + 8x^2 + 18x + 5$ by $(x + 3)$. Find the quotient and the remainder.	
5 A particle moves in a straight line. Its velocity at time t seconds is $v = (t^2 - 11t + 28)$ m s^{-1}. (a) Find the times when the particle is at rest. (b) Find its acceleration at the first of these times.	

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6 A is (2, −1) and B is (4, −9).
Find the equation of the perpendicular bisector of AB, in the form ax + by = c with integer a, b and c.

7 $\frac{4x + 7}{(x + 1)(x + 4)} \equiv \frac{A}{x + 1} + \frac{B}{x + 4}$.
Find A and B, and hence find $\int \frac{4x + 7}{(x + 1)(x + 4)}\, dx$.

8 A brick is on the point of sliding down a rough plane inclined at α to the horizontal, where $\tan \alpha = \frac{3}{4}$. Find the coefficient of friction.

9 Use the trapezium rule with 4 strips to estimate
$\int_0^3 \sqrt{x^3 + 3}\, dx$,
giving your answer to 3 significant figures.

10 The box plot summarises the delivery times, in minutes, of a pizza company.
Find the range and the interquartile range.

