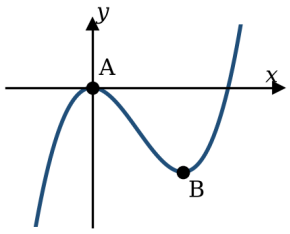
| Day 202 | A Level Maths: C Tier 10-a-day |
|---|---|
| **1** An arithmetic series has first term 8 and common difference 2. Find the smallest n for which the sum of the first n terms exceeds 500. | |
| **2** Simplify $2 - 2\sin^2 x$. | |
| **3** A boat moves with constant velocity $(-5\mathbf{i} - 12\mathbf{j})$ m s$^{-1}$.<br>At time t = 0 its position vector is $(4\mathbf{i} - \mathbf{j})$ m.<br>(a) Find its position vector when t = 5.<br>(b) Find the distance it travels in 5 s. | |
| **4** Here are 7 values: 16, 20, 4, 8, 16, 4, 14<br>Find the mean and the standard deviation, to 3 s.f. | |
| **5** The diagram shows the curve $y = x^3 - 3x^2$.<br>A and B are turning points. Find the coordinates of A and B.<br> | |

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|---|---|
| **6** X ~ B(n, p) has mean 12 and variance 3.<br>Find n and p. | |
| **7** Describe the single transformation that maps the graph of y = f(x) onto the graph of y = f(x) − 2. | |
| **8** A car's engine works at a constant rate of 12 kW. Find the driving force when the vehicle is moving at 30 m $s^{-1}$. | |
| **9** $\frac{-x+2}{(x+1)(x+4)} \equiv \frac{A}{x+1} + \frac{B}{x+4}$.<br>Find A and B, and hence find $\int \frac{-x+2}{(x+1)(x+4)}\,dx$. | |
| **10** The line y = x + k is a tangent to the curve $y = x^2 + 5x + 2$.<br>Find the value of k. | |