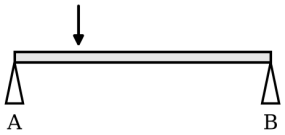
| Day 31 | A Level Maths: C Tier 10-a-day |
|---|---|
| **1** The vector $\mathbf{p} = 3\mathbf{i} - 4\mathbf{j}$.<br>Find (a) $\lvert\mathbf{p}\rvert$, (b) the angle p makes with the positive x-axis, measured anticlockwise (1 d.p.). | |
| **2** Solve $-2x - 8 \geq 3$. | |
| **3** A is acute and $\cos A = \frac{3}{5}$.<br>Find the exact values of sin 2A and cos 2A. | |
| **4** X is the number of red cards when 14 cards are dealt from a pack without replacement.<br>Can X be modelled by a binomial distribution?<br>Give a reason. | |
| **5** Write $\frac{4+\sqrt{2}}{\sqrt{2}}$ in the form $p\sqrt{2} + q$. | |

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|---|---|
| **6** The continuous random variable X has probability density function $f(x) = kx^2$ for $0 \leq x \leq 2$, and 0 otherwise.<br>Find the value of k. | |
| **7** A uniform beam AB of mass 30 kg and length 5 m rests horizontally on supports at A and B. A load of mass 25 kg is placed on the beam 1.25 m from A. Take $g = 9.8$ m $s^{-2}$. Find the reaction at B.<br><br> | |
| **8** Find the exact value of<br>$\int_1^7 \frac{5}{x}\,dx$. | |
| **9** A block is on the point of sliding down a rough plane inclined at $\alpha$ to the horizontal, where $\tan\alpha = \frac{3}{4}$. Find the coefficient of friction. | |
| **10** A geometric sequence begins 405, 135, 45, ...<br>Find the common ratio and the 8th term. | |