Proof by induction

Answers

Further Maths topic practice

This topic online

Q	Answer	Marks
1	$\Sigma(4r - 1) = n(2n + 1)$ for all positive integers n, proved by induction	4
2	$11^n - 6$ is divisible by 5 for all positive integers n, proved by induction	4
3	$u_n = 2^n + 1$ for all positive integers n, proved by induction	4
4	$\Sigma r(r + 2) = (1/6)n(n + 1)(2n + 7)$ for all positive integers n, proved by induction	5
5	$(1, 0; 3, 4)^n = (1, 0; 4^n - 1, 4^n)$ for all positive integers n, proved by induction	5
6	$7^(2n - 1) + 5$ is divisible by 12 for all positive integers n, proved by induction	6
7	$\Sigma 1/((2r + 1)(2r + 3)) = n/(3(2n + 3))$ for all positive integers n, proved by induction	6
8	$3^n + 5^n$ is divisible by 8 for all positive odd integers n, proved by induction	6
9	$u_n = 3^(n + 1) - 2n - 1$ for all positive integers n, proved by induction	6
10	**a)** proved by induction **b)** n = 10 **c)** 12 cm^2	9
11	**a)** proved by induction **b)** pattern 22	7
12	**a)** $A^2 = (4, 4; 0, 4)$, $A^3 = (8, 12; 0, 8)$ **b)** proved by induction **c)** n = 5, $A^5 = (32, 80; 0, 32)$	10

Full worked solutions, written out by hand, are on the solutions sheet for this topic.

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