S.4 Add Maths Quiz 3(a)

Time allowed: 20 minutes

Total Mark: 15

1. Prove, by mathematical induction, that $7^n + 3n - 1$ is divisible by 9 for all positive integers n.

(7 marks)

2. (a) Prove, by mathematical induction, that

$$\frac{3}{4} + \frac{5}{36} + \frac{7}{144} + \ldots + \frac{2n+1}{(n+1)^2 n^2} = \frac{n(n+2)}{(n+1)^2}$$

for all positive integers n.

(b) Using the result of (a), find the value of $\frac{17}{5184} + \frac{19}{8100} + \frac{21}{12100} + \ldots + \frac{31}{57600}$.

(5 + 3 marks)

End of Quiz