

FP1 Series Questions

3 Show that

$$\sum_{r=1}^n (r^2 - r) = kn(n+1)(n-1)$$

where k is a rational number.

(4 marks)

6 (a) (i) Expand $(2r - 1)^2$.

(1 mark)

(ii) Hence show that

$$\sum_{r=1}^n (2r - 1)^2 = \frac{1}{3}n(4n^2 - 1)$$

(5 marks)

(b) Hence find the sum of the squares of the odd numbers between 100 and 200.

(4 marks)
