Sums of Squares and Cubes

Example

 (a) Show that

$$\sum\_{r=n+1}^{2n}r^{2}=\frac{1}{6}n\left(2n+1\right)\left(7n+1\right)$$

(b) Verify that the result is true for $n=1$ and $n=2$.

Example:

Find the sum of the following series

$$\sum\_{r=1}^{n}r(r+3)(2r-1)^{}$$

and hence evaluate

$$\sum\_{r=11}^{40}r(r+3)(2r-1)^{} $$

Test Your Understanding



2. 

Extension: Given that $n$ is even, determine $1^{2}-2^{2}+3^{2}-4^{2}+5^{2}-…-n^{2}$

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