

**Induction – Q27 [Practice/M] (18/6/23)**

$$2 + 4 + 6 + \dots + 2n > n^2$$

**Solution**

Result to prove:  $2 \sum_{r=1}^n r > n^2$

[Show that the result is true for  $n = 1$ ]

Now assume that the result is true for  $n = k$

so that  $2 \sum_{r=1}^k r > k^2$

Then  $2 \sum_{r=1}^{k+1} r > k^2 + 2(k + 1)$

$= (k + 1)^2 + 1 > (k + 1)^2$

[Standard wording]