1 **(a)** Use standard results from the list of formulae (MF19) to show that

$$\sum_{r=1}^{n}(2-3r)(5-3r) = an^3 + bn^2 + cn,$$

where a, b and c are integers to be determined. [3]

(b) Use the method of differences to find $\sum_{r=1}^{n}\frac{1}{(2-3r)(5-3r)}$ in terms of n. [4]

(c) Deduce the value of $\sum_{r=1}^{\infty}\frac{1}{(2-3r)(5-3r)}$. [1]