$$\lim_{n \to \infty^+} \sum_{r=1}^{n} \left(2 + 2\,\frac{r}{n}\right) \cdot \frac{2}{n}$$ given

$$\lim_{n \to \infty^+} \sum_{r=1}^{n} \left(\frac{4}{n} + \frac{4\,r}{n^2}\right)$$ multiplied by $\frac{2}{n}$

$$\lim_{n \to \infty^+} \sum_{r=1}^{n} \left(\frac{4}{n}\right) + \lim_{n \to \infty^+} \sum_{r=1}^{n} \left(\frac{4\,r}{n^2}\right)$$ separating the terms

$$\lim_{n \to \infty^+} \frac{4}{n} \cdot \sum_{r=1}^{n} (1) + \lim_{n \to \infty^+} \frac{4}{n^2} \cdot \sum_{r=1}^{n} (r)$$ $\frac{4}{n}$ and $\frac{4}{n^2}$ separated

$$\sum_{r=1}^{n} (1) \to n$$

$$\sum_{r=1}^{n} (r) \to \frac{n \cdot (n+1)}{2}$$

r is the "range" variable from 1 to n

$$\lim_{n \to \infty^+} \frac{4}{n} \cdot \sum_{r=1}^{n} (1) \to 4$$

$$\lim_{n \to \infty^+} \frac{4}{n^2} \cdot \sum_{r=1}^{n} (r) \to 2$$

$$\lim_{n \to \infty^+} \frac{4}{n} \cdot \sum_{r=1}^{n} (1) + \lim_{n \to \infty^+} \frac{4}{n^2} \cdot \sum_{r=1}^{n} (r) \to 6$$