

MT 007.02 / SL 266.01

Ideas in Mathematics: The Grammar of Numbers

Sigma notation

1. Figure out what each of the following sums is equal to. First write out the terms to be added up, and then use a calculator to do the addition.

$$\sum_{t=1}^3 (2t + 1)^2 \quad \sum_{r=9}^{11} (r^2 - 1) \quad \sum_{m=3}^5 2$$

2. Compute each of these sums. Leave your answer as a fraction:

$$\sum_{n=1}^2 \frac{1}{n^2 + n} \quad \sum_{n=1}^3 \frac{1}{n^2 + n} \quad \sum_{n=1}^4 \frac{1}{n^2 + n} \quad \sum_{n=1}^5 \frac{1}{n^2 + n}$$

Based on your answers, make a guess about what

$$\sum_{n=1}^{100} \frac{1}{n^2 + n}$$

will equal.

3. Compute each of these sums:

$$\sum_{r=1}^2 (2r - 1) \quad \sum_{r=1}^3 (2r - 1) \quad \sum_{r=1}^4 (2r - 1) \quad \sum_{r=1}^5 (2r - 1)$$

Based on your answers, make a guess about what

$$\sum_{r=1}^{50} (2r - 1)$$

will equal.