

### Exercise 3

In the following exercises, use the rules for sums of powers of integers to compute the sums.

$$\sum_{i=5}^{10} i^2$$

---

#### Solution

$$\begin{aligned}\sum_{i=5}^{10} i^2 &= \sum_{i=1}^{10} i^2 - \sum_{i=1}^4 i^2 \\ &= \frac{10(10+1)(20+1)}{6} - \frac{4(4+1)(8+1)}{6} \\ &= \frac{10(11)(21)}{6} - \frac{4(5)(9)}{6} \\ &= 385 - 30 \\ &= 355\end{aligned}$$