

## Exercise 9

In the following exercises, use summation properties and formulas to rewrite and evaluate the sums.

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

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### Solution

$$\begin{aligned}\sum_{j=1}^{50} (j^2 - 2j) &= \sum_{j=1}^{50} j^2 - \sum_{j=1}^{50} 2j \\ &= \sum_{j=1}^{50} j^2 - 2 \sum_{j=1}^{50} j \\ &= \frac{50(50+1)(100+1)}{6} - 2 \frac{50(50+1)}{2} \\ &= 42\,925 - 2(1275) \\ &= 40\,375\end{aligned}$$