



Homework 8.1 – Sigma Notation and Summations

1. (1 pt) [alfredLibrary/AUCI/chapter8/lesson1/quiz/sum4pet.pg](#)

Find the numerical value of each sum without using the "summation formulas."

(a) $\sum_{k=2}^7 (3k - 1) =$ _____

(b) $\sum_{k=4}^7 (k^2 - k) =$ _____

2. (1 pt) [alfredLibrary/AUCI/chapter8/lesson1/sum6pet.pg](#)

Use the "summation formulas" to express the following sum in closed form. Your answer should be in terms of n .

$$\sum_{k=1}^n (2 + 2k)^2 =$$

(HINT: You must first expand $(2 + 2k)^2$).

3. (1 pt) [alfredLibrary/AUCI/chapter8/lesson1/sum8pet.pg](#)

(a) Use the "summation formulas" to find a closed form for the sum. Your answer will be in terms of n .

$$\sum_{k=1}^n (7 - 6k + k^2 + 6k^3) =$$

(b) Use the closed form from part (a) to find the sum.

$$\sum_{k=1}^{25} (7 - 6k + k^2 + 6k^3) =$$

4. (1 pt) [alfredLibrary/AUCI/chapter8/lesson1/sum2pet.pg](#)

Use the "summation formulas" to express the following sum in closed form. Your answer should be in terms of n .

$$\sum_{k=1}^n \left(2 + 3 \cdot \frac{k}{n} \right)^2 =$$

(HINT: You must first expand $\left(2 + 3 \cdot \frac{k}{n} \right)^2$).