Examples 8.1 – Sigma Notation and Summations

1. Find the sum by expanding and adding.

   Solution: (a) $\sum_{k=3}^{7} k =$

   (b) $\sum_{k=-2}^{3} k^3 =$

2. Find the sum by using the closed form summation formulas.

   Solution: (a) $\sum_{k=1}^{50} 1 =$

   (b) $\sum_{k=1}^{1000} k =$

   (c) $\sum_{k=3}^{99} k^2 =$

   (d) $\sum_{k=-2}^{25} k^3 =$

3. Write the summation $\sum_{k=1}^{n} \frac{1-2k+4k^3}{n^4}$ in closed form. Assume that n is a positive integer.

   Solution: $\sum_{k=1}^{n} \frac{1-2k+4k^3}{n^4} =$