1. Evaluate the sum.

   (a) $\displaystyle\sum_{k=1}^{5} k(k+2)$

   (b) $\displaystyle\sum_{k=1}^{24} 5$

   (c) $\displaystyle\sum_{k=2}^{5} \frac{2^k}{k}$

2. Express each sum in terms of n.

   (a) $\displaystyle\sum_{k=1}^{n}(4k+3)$

   (b) $\displaystyle\sum_{k=1}^{n}(k^2+2k+4)$

   (c) $\displaystyle\sum_{k=2}^{n}(k-2)^3$

3. Express in summation notation.

   (a) $4+10+16+22+\cdots+46$

   (b) $\frac{1}{5}+\frac{2}{6}+\frac{3}{7}+\frac{4}{8}+\cdots+\frac{11}{15}$

   (c) $1+\frac{x}{2}+\frac{x^2}{3}+\frac{x^3}{4}+\cdots+\frac{x^n}{n+1}$

4. Consider the graph of $f(x) = x^2 + 4$ between 2 and 5.

(a) In the space provided, sketch the graph of $f(x)$, shade in the region under $f(x)$ on the interval $[2, 5]$, and draw an example of a partition of $[0, 5]$ into subintervals

(b) Find the area under using right-hand endpoints.

(c) Find the area under using left-hand endpoints.

(d) Find the area under using midpoints.