1. Evaluate each of the following sums.

   (a) \( \sum_{k=4}^{12} k \)  
   (b) \( \sum_{k=2}^{6} (2k^2 - 1) \)  
   (c) \( \sum_{k=1}^{7} (5k - 21) \)  
   (d) \( \sum_{k=4}^{100} 3 \)

2. For each part, first sketch the region under the graph of \( y = f(x) \) on the given interval. Then approximate the area of each region by using a Riemann sum with right endpoints and the indicated number of rectangles.

   (a) \( f(x) = \frac{1}{x + 4} \) on \([0, 2]\) for \( n = 4 \)
   (b) \( f(x) = \cos(x) \) on \([-\frac{\pi}{2}, \frac{\pi}{2}]\) for \( n = 4 \)
   (c) \( f(x) = \sqrt{3 + x^2} \) on \([1, 4]\) for \( n = 6 \)
   (d) \( f(x) = e^{2x} \) on \([-5, 0]\) for \( n = 5 \)

3. For each part, estimate the given integral by using a Riemann sum with right endpoints and the indicated number of rectangles.

   (a) \( \int_{-2}^{3} x^2 \, dx \) with \( n = 4 \)
   (b) \( \int_{3}^{5} \frac{1}{2x + 10} \, dx \) with \( n = 5 \)
   (c) \( \int_{0}^{2} (2x^2 - x^4) \, dx \) with \( n = 4 \)
   (d) \( \int_{-\pi}^{2\pi} \cos \left( \frac{x}{2} \right) \, dx \) with \( n = 6 \)