1. (§4.5#14) What are the dimensions of the lightest open-top right circular cylindrical can that will hold a volume of 1000 cm$^3$? (This means to minimize the area of the bottom and the sides of the can.)

2. (§4.5#32) Jane is 2 miles offshore in a boat and wishes to reach a coastal village 6 miles down a straight shoreline from the point nearest the boat. She can row 2 mph and walk 5 mph. Where should she land her boat to reach the village in the least amount of time?
3. Use Newton’s method to approximate the negative fourth root of 2 by solving the equation \( x^4 - 2 = 0 \). Start with \( x_0 = -1 \) and find \( x_2 \).

4. Write without sigma notation, then evaluate:
   a. \( \sum_{k=1}^{6} (-1)^k \cos k\pi \)
   b. \( \sum_{k=1}^{5} \frac{k - 1}{k} \)

5. Use a finite sum to estimate the area under the graph of \( f(x) = x^3 \) on the interval \([0, 2]\) by partitioning the interval into four subintervals of equal length and evaluating \( f \) at the subinterval midpoints.

6. Which formula is not equivalent to the other two?
   \[ \sum_{k=1}^{4} (k - 1)^2; \sum_{k=-1}^{3} (k + 1)^2; \sum_{k=-3}^{-1} k^2 \]