MATH 111-007 RECITATION 1201

Problem 1. Write the sums without sigma notation and then evaluate them.

(1)
$$\sum_{k=1}^{3} (-1)^{k+1} \sin\left(\frac{\pi}{k}\right)$$

(2)
$$\sum_{l=1}^{4} (-1)^{l} \cos(l\pi)$$

Problem 2. Express the following sums in sigma notation.

(1)
$$1 + 4 + 9 + 16$$

(2)
$$1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \frac{1}{5}$$

(3)
$$-\frac{1}{5} + \frac{2}{5} - \frac{3}{5} + \frac{4}{5} - \frac{5}{5}$$

Problem 3. (Limits of Finite Sums) For the functions below, find a formula for the finite sum (Riemann sum) obtained by dividing the interval $[a, b]$ into n equal subintervals and use the **right-hand endpoints** of each subinterval. Then take a limit as $n \to \infty$ to calculate the area under the curve over $[a, b]$.

(1) $f(x) = 2x$ over $[0, 3]$.
(2) $f(x) = 3x + 2x^2$ over $[0, 1]$.