Riemann Sums

1. Look up the Riemann Sum formula

2. Look up the four summation formulas for $\sum_{i=1}^{n} 1$, $\sum_{i=1}^{n} i$, $\sum_{i=1}^{n} i^2$, $\sum_{i=1}^{n} i^3$.

3. Approximate the area of $f(x) = \frac{\sin(x)}{4 + \cos(x)}$ on the interval $[0, 2\pi]$ by finding:
   
   (a) $R_4$
   (b) $M_4$
   (c) $L_4$

4. Find the following integrals using Riemann sums:
   
   (a) $\int_{0}^{2} 2t \, dt$
   (b) $\int_{0}^{4} 3u + 3 \, du$
   (c) $\int_{0}^{2} 3n^2 \, dn$
   (d) $\int_{1}^{5} 7s \, ds$
   (e) $\int_{2}^{5} l + 6 \, dl$
   (f) $\int_{1}^{5} 2p^2 + 5 \, dp$
   (g) $\int_{2}^{3} 2w^2 - 3w + 6 \, dw$
   (h) $\int_{-3}^{0} 2q + 3 \, dq$
   (i) $\int_{-4}^{2} 2f^2 - 3f \, df$

Now that you have solved all of them use FTC II to make sure your answers are correct.