

HW §5.1. Numbers 4,12, 18, 20, 22

4.a. $R = 1(24 + 21 + 16 + 9 + 0) = 70$

b. $L = 1(25 + 24 + 21 + 16 + 9) = 95.$

12a. $12(30 + 28 + 25 + 22 + 24) = 1548$

b. $12(28 + 25 + 22 + 24 + 27) = 1512$

18.

$$\lim_{n \rightarrow \infty} \sum_{i=1}^n \frac{\ln(3 + 7i/n)}{3 + 7i/n} \cdot \frac{7}{n}$$

20. $f(x) = x^{10} \quad 5 \leq x \leq 7.$

22a.

$$\lim_{n \rightarrow \infty} \sum_{i=1}^n (i/n)^3 \cdot 1/n$$

b.

$$\begin{aligned} \lim_{n \rightarrow \infty} \sum_{i=1}^n (i/n)^3 \cdot 1/n &= \lim_{n \rightarrow \infty} 1/n^4 \sum_{i=1}^n i^3 \\ &= \lim_{n \rightarrow \infty} \frac{1}{n^4} \left\{ \frac{n(n+1)}{2} \right\}^2 \\ &= \lim_{n \rightarrow \infty} \frac{n^4 + 2n^3 + n^2}{4n^4} \\ &= 1/4 \end{aligned}$$