
Complete the following problems. Show all work to receive full credit.

1. The following table shows the velocity of a model train engine moving along a track for 5 sec. Estimate the distance traveled by the engine using 5 subintervals of length 1 with right endpoint values.

Time (sec.)	Velocity (in/sec)
0	0
1	12
2	22
3	10
4	5
5	13

$$\text{distance} = 12(1) + 22(1) + 10(1) + 5(1) + 13(1) = 62$$

2. Suppose that $\int_7^9 f(x) dx = -9$ and $\int_7^9 h(x) dx = 5$

(a) $\int_9^7 -2f(x) dx$

$$\begin{aligned} &= -2 \int_9^7 f(x) dx \\ &= -(-2) \int_7^9 f(x) dx \\ &= 2 \int_7^9 f(x) dx \\ &= 2(-9) = -18 \end{aligned}$$

(b) $\int_7^9 (h(x) - f(x)) dx$

$$\begin{aligned} &= \int_7^9 h(x) dx - \int_7^9 f(x) dx \\ &= 5 - (-9) \\ &= 5 + 9 = 14 \end{aligned}$$