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Complete the following problems. Calculate the following integrals. You do not need to simplify. Show all work to receive full credit.

1. The accompanying table shows the velocity of a model train engine moving along a track for 10 sec. Estimate the distance traveled by the engine using 5 subintervals of length 2 with right-hand endpoints.

Time (sec)	Velocity (in/sec)	Time interval	Right-hand Velocity	Distance
0	0	$0 \leq t \leq 2$	22	$22 \cdot 2 = 44$
2	22	$2 \leq t \leq 4$	5	$5 \cdot 2 = 10$
4	5	$4 \leq t \leq 6$	11	$11 \cdot 2 = 22$
6	11	$6 \leq t \leq 8$	2	$2 \cdot 2 = 4$
8	2	$8 \leq t \leq 10$	0	$0 \cdot 2 = 0$
10	0			

Totaling, we get  $44 + 10 + 22 + 4 = 80$  inches.

2. Suppose that  $\int_1^9 f(x)dx = -1$  and  $\int_7^9 f(x)dx = 5$ . Find the following:

(a)  $\int_1^1 f(x)dx = 0$

(b)  $\int_9^1 f(x)dx = -\int_1^9 f(x)dx = -(-1) = 1$

(c)  $\int_1^7 f(x)dx = \int_1^9 f(x)dx - \int_7^9 f(x)dx = -1 - 5 = -6$