

Name : _____

TO RECEIVE FULL CREDIT YOU MUST SHOW ALL YOUR WORK.

1. Evaluate the indefinite integral:

(a) $\int (t^5 + 3t + 2) dt$

(b) $\int t^{9/5} dt$

(c) $\int \frac{1}{x^{3/2}} dx$

(d) $\int (\cos x - e^x) dx$

2. • Use the graph in Figure 1 to estimate L_6 .

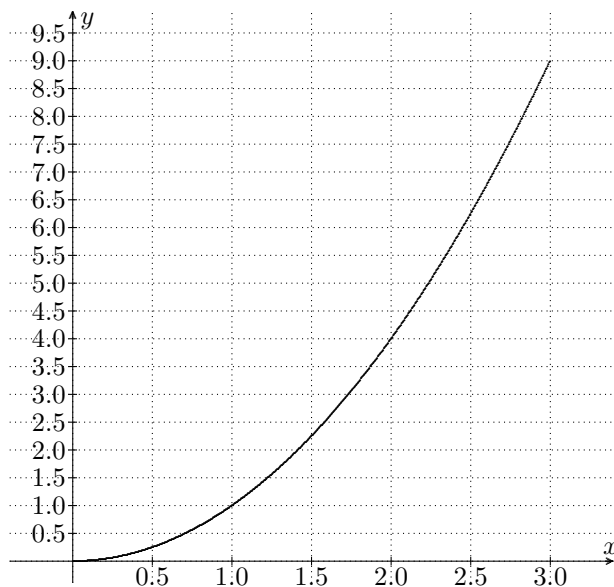


Figure 1:

3. Compute R_6 , L_6 and M_3 to estimate the distance traveled over $[0, 3]$ if the velocity at half-second intervals is as follows:

| | | | | | | | |
|----------|---|-----|----|-----|----|-----|----|
| t(s) | 0 | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 |
| v (ft/s) | 0 | 12 | 18 | 25 | 20 | 14 | 20 |

4. Evaluate the following sums:

(a) $\sum_{k=1}^{40} 10$

(b) $\sum_{i=0}^{40} 10$

(c) $\sum_{j=20}^{50} j(j-1)$

5. Find a formula for R_N for the function $f(x) = x^2 + x$ over $[0, 1]$. Then compute the area under the graph as a limit.

6. Suppose the graph of $f(t)$ is as shown in Figure 2.

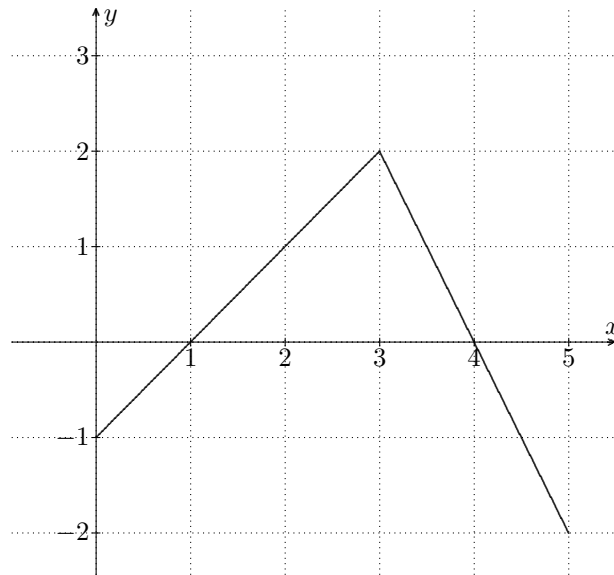


Figure 2:

Use the graph to compute

- $\int_0^3 g(t) dt$

- $\int_3^5 g(t) dt$

7. Assuming that

$$\int_0^1 f(x) dx = 1, \quad \int_0^2 f(x) dx = 4, \quad \int_1^4 f(x) dx = 7,$$

calculate the following integrals:

(a) $\int_0^4 f(x) dx$

(b) $\int_4^1 f(x) dx$

8. Evaluate the integral using the *FTC I*.

(a) $\int_1^4 (4 - 5u^4) du$

(b) $\int_1^4 \left(x + \frac{1}{x}\right) dx$

(c) $\int_1^{27} \frac{t+1}{\sqrt{t}} dt$

(d) $\int_0^{\pi/4} \sec \theta \tan \theta d\theta$