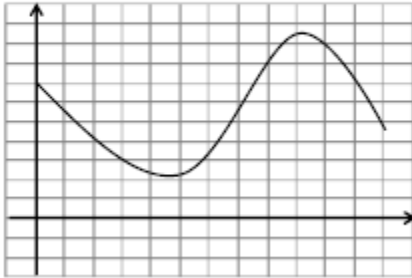


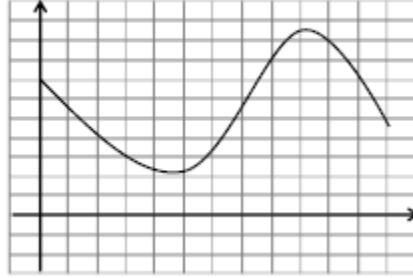
Keeper 6.2 Virtual Problems - Riemann Sums

1. Estimate the area under the curve.

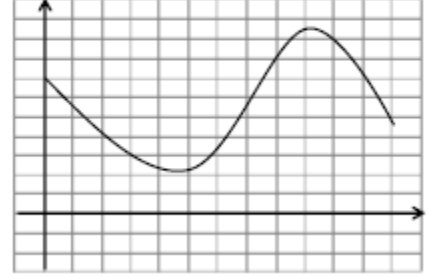
A. R_4



B. L_3

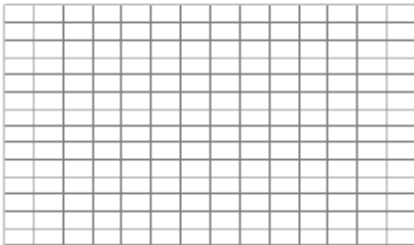


C. M_4

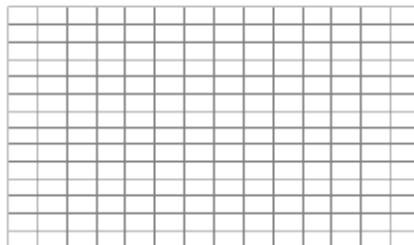


2. Estimate the area given $f(x) = -x^2 + 4, [0,2]$

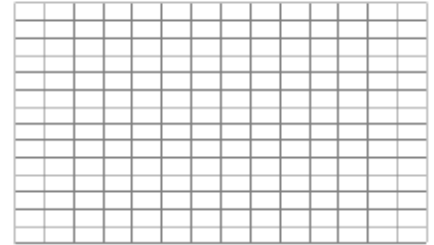
A. R_4



B. L_4

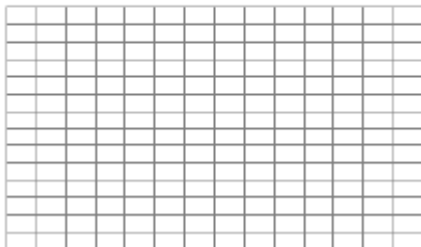


C. M_2



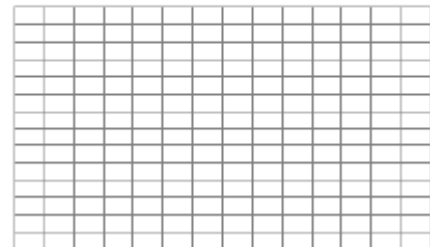
3. Estimate the area given $f(x) = \ln x, [1,2]$

M_6



4. Estimate the area given $f(x) = \sin x, [0, \pi]$

R_4



Problems 5-9: Given below is a table of function values $h(x)$. Approximate each of the following integrals using the indicated Riemann or Trapezoidal sum, using the indicated subintervals of equal length.

x	-3	-1	1	3	5	7	9
$h(x)$	5	2	-3	-7	-2	6	11

5. $\int_{-3}^1 h(x)dx$ using two subintervals and a LRS
6. $\int_{-3}^9 h(x)dx$ using three subintervals and a RRS
7. $\int_{-3}^9 h(x)dx$ using three subintervals and a Midpoint Riemann Sum.
8. $\int_{-3}^3 h(x)dx$ using three subintervals and a Trapezoidal sum.
9. $\int_{-3}^9 h(x)dx$ using six subintervals and a Trapezoid sum

-
10. Approximate $\int_0^\pi (2x \cdot \sin x)dx$ using four subintervals of equal length and a RRS
11. Approximate $\int_{-2}^{10} (e^2 x^2) dx$ using four subintervals of equal length and a Trapezoidal sum

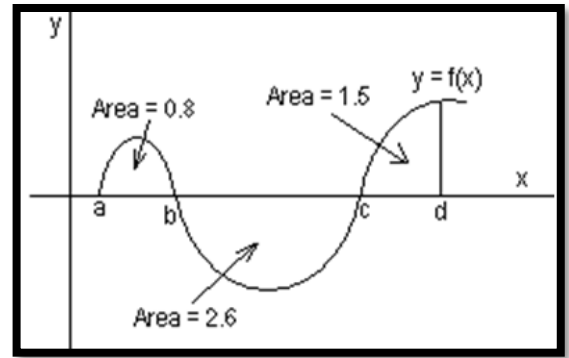
12. Use the areas shown in the figure to find

a. $\int_a^b f(x)dx$

b. $\int_b^c f(x)dx$

c. $\int_a^c f(x)dx$

d. $\int_a^d f(x)dx$

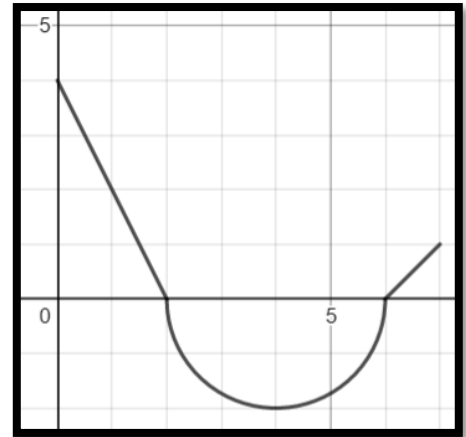


13. The graph of g consists of two straight lines and a semicircle. Use it to evaluate each integral.

a. $\int_0^2 g(x)dx$

b. $\int_2^6 g(x)dx$

c. $\int_0^7 g(x)dx$



14. The region A has an area of 1.5, and $\int_0^6 f(x)dx = 3.5$. Use this information to answer the following.

a. $\int_0^2 f(x)dx$

b. $\int_2^6 f(x)dx$

c. $\int_0^6 |f(x)|dx$

d. $\int_0^2 -2f(x)dx$

