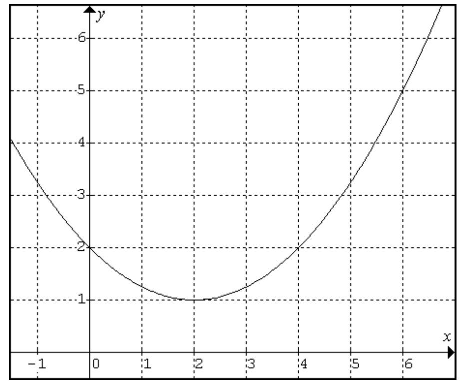
Approximating Definite Integrals

[1 -4] Shade the rectangles or trapezoids used to approximate each definite integral. Calculate the value of each approximation

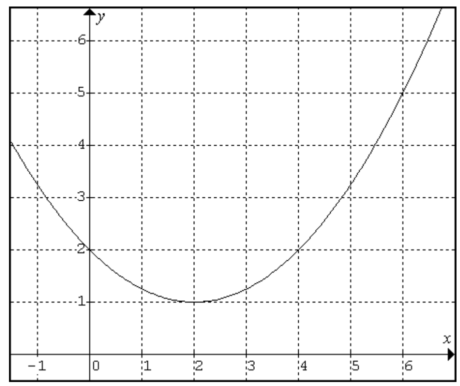
[1] Left-hand Riemann Sum (n = 3)

$\int_0^6 f(t)\,dt$



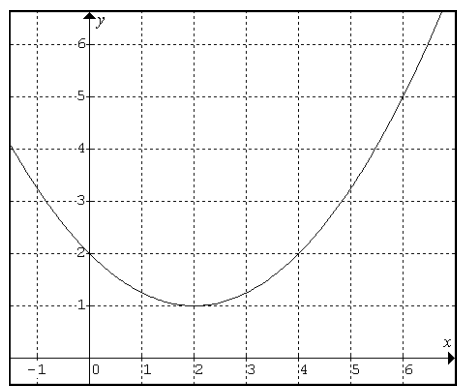
[2] Right-hand Riemann Sum (n = 3)

$\int_0^6 f(t)\,dt$



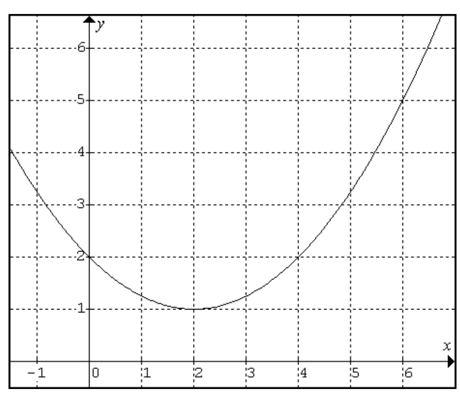
[3] Trapezoids (n = 3)

$\int_0^6 f(t)\,dt$



[4] Midpoint Riemann Sum (n = 3)

$\int_0^6 f(t)\,dt$



[5] Approximate $\int_{-2}^{4} x^2\,dx$ by each of the following methods.

[a] Right-hand Riemann sum (n = 3)

[b] Left-hand Riemann sum (n = 3)

[c] Right-hand Riemann sum (n = 6)

[d] Right-hand Riemann sum (n = 60)

[e] Right-hand Riemann sum (n = 600)

[f] Trapezoid Rule (n = 6)

[g] Midpoint Riemann sum (n = 6)

[h] Simpson's Rule (n = 6)

[6] Approximate $\int_{1}^{2} \left(x^4 - x^3\right) dx$ by each of the following methods.

[a] Right-hand Riemann sum (n = 4)

[b] Left-hand Riemann sum (n = 4)

[c] Right-hand Riemann sum (n = 8)

[d] Right-hand Riemann sum (n = 80)

[e] Right-hand Riemann sum (n = 800)

[f] Trapezoid Rule (n = 4)

[g] Midpoint Riemann sum (n = 4)

[h] Simpson's Rule (n = 4)

[7] The following table gives values for the continuous function $y = f(x)$.

x	-1	1	4	5	8
$f(x)$	3	4	6	2	0

Approximate $\int_{-1}^{8} f(x)\,dx$ by each of the following methods.

[a] Right-hand Riemann sum (n = 4)

[b] Left-hand Riemann sum (n = 4)

[c] Trapezoids (n = 2)

[d] Trapezoids (n = 4)

[8] The following table gives values for the continuous function $y = g(x)$.

x	0	1	3	4	6
$g(x)$	3	4	6	2	0

Approximate $\int_{0}^{6} g(x)\,dx$ by each of the following methods.

[a] Trapezoids (n = 2)

[b] Trapezoids (n = 4)

[9] Assume *f* is everywhere continuous.

[a] Simplify $\int_{2}^{-4} f(x)\,dx + \int_{-4}^{3} f(x)\,dx$

[b] Simplify $\int_{0}^{5} f(x)\,dx - \int_{-1}^{5} f(x)\,dx$

[c] Simplify $\int_{2}^{6} f(x)\,dx + \int_{6}^{2} f(x)\,dx$