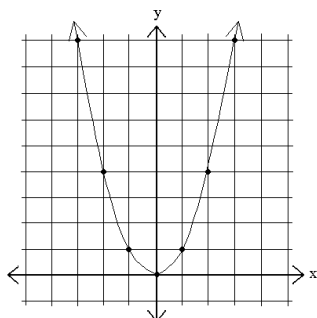## 5.5 Trapezoidal Rule

Ex 1) Approximate the value of the integral.

$$\int_0^4 x^2 \, dx$$

The Trapezoidal Rule

To approximate $\int_a^b f(x) \, dx$, use $T = \dfrac{h}{2} (y_o + 2y_1 + 2y_2 + \ldots + 2y_{n-1} + y_n)$

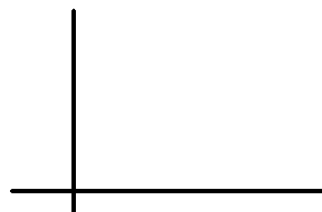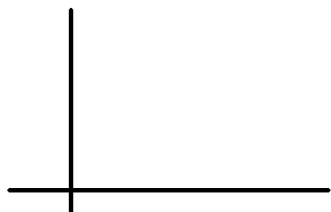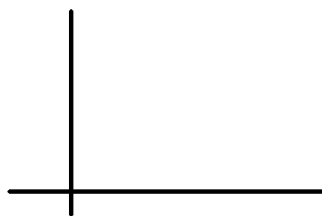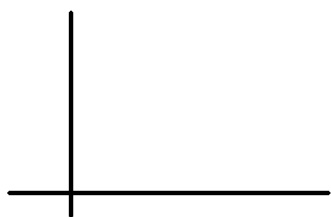Ex 2) Use the trapezoid rule with n = 4 to approximate the value of the integral.

$$\int_0^4 x^2 \, dx$$

Ex 3) Use the trapezoid rule with n = 4 to approximate the value of the integral.

$$\int_{1}^{3} \frac{1}{x}\, dx$$

Ex 4) Use the concavity of the function to predict whether the approximation is an overestimate or an underestimate.

Ex 5) Use a trapezoid approximation to estimate distance traveled.

Time(s)	Speed (mph)
0	0
1	3
2	7
3	12
4	17
5	25
6	33
7	41
8	48