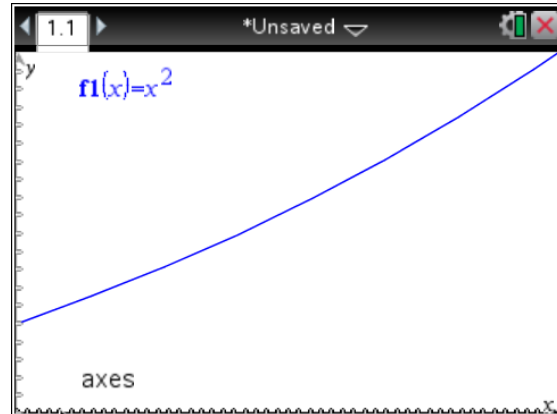


5.5 Trapezoidal Rule

Approximate the area under the curve $y = x^2$
from 1 to 2 using trapezoids.



Nov 25-10:32 PM

Trapezoid Rule:

general rule:

$$T = \frac{h}{2}(y_0 + 2y_1 + 2y_2 + \dots + 2y_{n-1} + y_n)$$

average of LRAM and RRAM

$$LRAM = h(y_0 + y_1 + y_2 + \dots + y_{n-1})$$

$$RRAM = h(y_1 + y_2 + \dots + y_{n-1} + y_n)$$

$$T = \frac{L + R}{2}$$

Nov 25-10:35 PM

Concavity in estimates:

Nov 13-2:06 PM

Estimate $\int_1^2 \frac{1}{x} dx$ with 10 trapezoids

how to use calculator

over or under estimate?

Nov 13-1:53 PM

Calculate the area of $\int_2^4 2x^2 dx$ using 4 trapezoids

Would you expect this to be an over or under estimate?

Nov 13-2:09 PM

An observer measures the outside temperature every hour from noon until midnight, recording the temperature in the following table:

time	noon	1	2	3	4	5	6	7	8	9	10	11	mid
temp	63	65	66	68	70	69	68	68	65	64	62	58	55

What was the average temperature for the 12-hour period?

Nov 13-1:54 PM

Error Bound for the Trapezoid rule:

$$|E| \leq \frac{b-a}{12} h^2 M_{f''} \quad M_{f''} \text{ is the max value of } f''$$

Estimate the error in approximating trapezoids. $\int_1^2 \frac{1}{x} dx$ with 10

Nov 13-2:00 PM