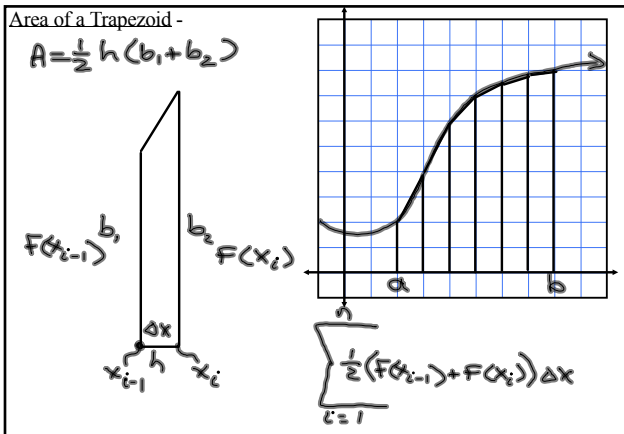
# Calculus AB

4-6

Trapezoidal Rule

Area of a Trapezoid -

$A = \frac{1}{2} h(b_1 + b_2)$




Use both the Trapezoidal Rule and the Midpoint Rule with $n = 4$ to approximate each definite integral. Then compare to the calculator approximation. (pg 316)

4) $\int_2^3 \frac{2}{x^2}\,dx$ $= \sum_{i=1}^{4} \frac{1}{2}[f(x_{i-1}) + f(x_i)]\Delta x$

$\Delta x = \frac{1}{4}$

$x_0 = 2$, $x_1 = \frac{9}{4}$, $x_2 = \frac{5}{2}$, $x_3 = \frac{11}{4}$, $x_4 = 3$

$\frac{1}{2}\left[\left(\frac{1}{2} + \frac{32}{81}\right) + \left(\frac{32}{81} + \frac{8}{25}\right) + \left(\frac{8}{25} + \frac{32}{121}\right) + \left(\frac{32}{121} + \frac{2}{9}\right)\right]\frac{1}{4} = .335 \text{ units}^2$

($x_0$, $x_1$, $x_1$, $x_2$, $x_2$, $x_3$, $x_3$, $x_4$)

calculator $\frac{1}{3}$

Assignment:
Pg. 316
1, 11, 17

Use both the Trapezoidal Rule and the Midpoint Rule for each.