Math 150   Ch. 4   Review

1. Antiderivatives – guess and check (by taking deriv.)

$$\int x^n dx = \frac{1}{n+1} x^{n+1} + c \qquad \text{Know Trig } \int\text{'s}$$

2. Σ notation, Sum Arithmetic $S = \frac{(1^{st} + last)\#term}{2}$

   Calculator Sums

   $\approx$ Areas using inscribed, circumscribed, midpoint
   rectangles.

3. Definite $\int$: $\displaystyle\lim_{n\to\infty} \sum_{i=1}^{n} f(c_i)\Delta x$ or $\displaystyle\lim_{\|\Delta\|\to 0} f(c_i)\Delta x_i$

   $$= \int_a^b f(x)dx$$

   Know what the pieces in the Riemann sums above represen

   Properties :

   1) $\int_a^b f(x)dx = $ Area iff $f(x) \geq 0$

   2) $\int_a^a f(x)dx = 0$

   3) $\int_a^b f(x)dx = -\int_b^a f(x)dx$

   4) $\int_a^b f(x)dx + \int_b^c f(x)dx = \int_a^c f(x)dx$

   Integration
   by areas of
   known shapes

4. $\int_a^b f(x)dx = F(b) - F(a)$ where $F'(x) = f(x)$

   MVT$\int$: $f(c) = \frac{1}{b-a}\int_a^b f(x)dx$ where $f(c) = $ average valu

   If $F(x) = \int_{g(x)}^{h(x)} f(t)dt \Rightarrow F'(x) = h'(x)f(h(x)) - g'(x)f(g(x))$

$\int$ by Substitution : Try $u = $ thing to a power
   $u = $ angle of trig function

`rticle Problems