Integrals

Summation Properties

Use the Memory Practice Log to cover up the right side of the table.

Note: c is any constant.

$\sum_{i=1}^{n}(a_i \pm b_i) =$	$\sum_{i=1}^{n} a_i \pm \sum_{i=1}^{n} b_i$
$\sum_{i=1}^{n} ca_i =$	$c \cdot \sum_{i=1}^{n} a_i$
$\sum_{i=1}^{n} c =$	$n \cdot c$
$\sum_{i=1}^{n} i =$	$\frac{n(n+1)}{2}$
$\sum_{i=1}^{n} i^2 =$	$\frac{n(n+1)(2n+1)}{6}$
$\sum_{i=1}^{n} i^3 =$	$\left(\frac{n(n+1)}{2}\right)^2$

Integral Properties

Use the Memory Practice Log to cover up the right side of the table.

Note: k is any constant.

$-\int_a^b f(x)\,dx =$	$\int_b^a f(x)\,dx$
$\int_a^a f(x)\,dx =$	0
$\int_a^b kf(x)\,dx =$	$k\int_a^b f(x)\,dx$
$\int_a^b \big(f(x) \pm g(x)\big)\,dx =$	$\int_a^b f(x)\,dx \pm \int_a^b g(x)\,dx$
$\int_a^b f(x)\,dx + \int_b^c f(x)\,dx =$	$\int_a^c f(x)\,dx$
If $f(x) \geq g(x)$ on $[a,b]$, then…	…$\int_a^b f(x)\,dx \geq \int_a^b g(x)\,dx$
The Fundamental Theorem of Calculus, Part 2: $\int_a^b f(x)\,dx =$	$F(b) - F(a)$
Integration by parts: $\int u\,dv =$	$uv - \int v\,du$

Miscellaneous

Use the Memory Practice Log to cover up the right side of the table.

Limit Definition	$\lim_{x \to x_0} f(x) = L$ if for every number $\epsilon > 0$, there exists a corresponding number $\delta > 0$ such that for all x, $0 < \lvert x - x_0 \rvert < \delta \Rightarrow \lvert f(x) - L \rvert < \epsilon$.
The Mean Value Theorem	Suppose that 1. $f(x)$ is continuous on $[a, b]$, and 2. $f(x)$ is differentiable on (a, b). Then there is at least one point c in (a, b) at which $\frac{f(b) - f(a)}{b - a} = f'(c)$