Average Value Formula

$$\frac{1}{b-a}\int_a^b f(x)\,dx$$

Integrals

$\int k\,dx$ $kx+C$

$\int x^n\,dx$ $\frac{1}{n+1}x^{n+1}+C$

$\int \frac{1}{x}dx$ $\ln|x|+C$

$\int \sqrt{x}\,dx$ $\frac{2}{3}x^{3/2}+C$

$\int e^x\,dx$ e^x+C

$\int a^x\,dx$ $\frac{1}{\ln a}a^x+C$

$\int \sin x\,dx$ $-\cos x+C$

$\int \cos x\,dx$ $\sin x+C$

$\int \cos x\,dx$ $\sin x+C$

$\int \frac{1}{\cos^2 x}dx$ $\tan x+C$

$\int \frac{1}{x^2+1}dx$ $\tan^{-1}x+C$ or $\arctan x+C$

$\int \frac{1}{\sqrt{1-x^2}}dx$ $\sin^{-1}x+C$ or $\arcsin x+C$

Disk Method

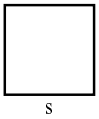
$$\pi \int r^2 \, dr$$

Washer method

$$\pi \int R^2 - r^2 \, dr$$

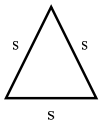
Cross Sections

Square



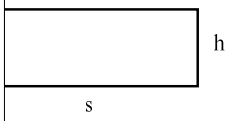
$\int s^2 \, ds$

Equilateral Triangle



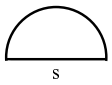
$\frac{\sqrt{3}}{4} \int s^2 \, ds$

Rectangle



$\int s \cdot h \, ds$

Semicircle



$\frac{\pi}{8} \int s^2 \, ds$

Some extras....

1. Particles are speeding up if and only if VELOCITY AND ACCELERATION HAVE THE SAME SIGN!!!

2. For total distance use absolute values in your integrand.

3. When asked for ABSOLUTE/ global max or mins MAKE A TABLE- check ENDPOINTS

This doesn't cover everything but you know the rest. :)

Have Confidence!

You Can do This!

One important key to success is self-confidence. An important key to self-confidence is preparation.

-Arthur Ashe