Integral Applications

Area between two curves

$$A = \int_a^b [f(x) - g(x)]\,dx$$

Disk Method

$$V = \int_a^b \pi[f(x)]^2\,dx$$

Washer Method

$$V = \int_a^b \pi[(f(x))^2 - (g(x))^2]\,dx$$

Method of Cylindrical Shells

$$V = \int_a^b (2\pi x f(x))\,dx$$

Arc Length

$$\text{Arc Length} = \int_a^b \sqrt{1 + [f'(x)]^2}\,dx$$

Surface Area

$$\text{Surface Area} = \int_a^b \left(2\pi f(x)\sqrt{1 + (f'(x))^2}\right)\,dx$$