

Even Functions:

$$\int_{-a}^a f(x) dx = 2 \int_0^a f(x) dx$$

Odd Functions:

$$\int_{-a}^a f(x) dx = 0$$

Ex) Given: $\int_2^4 x^3 dx = 60$ $\int_2^4 x dx = 6$ $\int_2^4 dx = 2$

1) $\int_2^2 x^3 dx = 0$

2) $\int_2^4 15 dx = 15 \int_2^4 dx$
 $15(2) = 30$

3) $\int_2^4 (x^3 + 4) dx = \int_2^4 x^3 dx + \int_2^4 4 dx$

$60 + 4(2) = 68$

4) $\int_2^4 (6 + 2x - x^3) dx = 6 \int_2^4 dx + 2 \int_2^4 x dx - \int_2^4 x^3 dx$

$6(2) + 2(6) - 60 = -36$