

5.2 Definite Integrals

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

Find the area between the curve and the x-axis on the interval $[a,b]$

Ex 1) $\int_0^5 6 dx$

$$\text{Ex 2) } \int_0^8 (2x + 2) dx$$

$$\text{Ex 3) } \int_{-4}^4 \sqrt{16-x^2} dx$$

$$\text{Ex 4) } \int_{-2}^4 (|x| + 2) dx$$

$$\int_a^b f(x) dx \quad \text{Area above axis} - \text{Area below}$$

Area above axis is positive

Area below axis is negative

$$\text{Ex 5) } \int_{-4}^{10} (x) \, dx$$

$$\text{Ex 6) } \int_{-2}^4 (2x - 4) \, dx$$

$$\text{Ex 7) } \int_{-1}^2 (|x|/x) dx$$

$$\text{Ex 8) } \int_0^b 3t dt$$

$$\text{Ex 9) } \int_a^{(\sqrt{3})a} x \, dx$$

Way #1

$$\text{Ex 10) } \int_a^{(\sqrt{3})a} x \, dx$$

Way #2

$$\text{Ex 11) } \int_a^b 5x \, dx$$

$$\text{Ex 12) } \int_a^b 2x \, dx$$