DO NOW

5.3 Riemann Sums and Definite Integrals Day 2

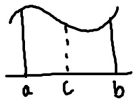
Two Special Definite Integrals

1. $\int_a^a f(x)dx = 0$

2. $\int_b^a f(x)dx = -\int_a^b f(x)dx$

Properties of Definite Integrals

1. $\int_a^b f(x)dx = \int_a^c f(x)dx + \int_c^b f(x)dx$



2. $\int_a^b k\,f(x)dx = k\int_a^b f(x)dx$

3. $\int_a^b [f(x) \pm g(x)]dx = \int_a^b f(x)dx \pm \int_a^b g(x)dx$

6. Given: $\int_0^3 f(x)dx = 4$; $\int_3^6 f(x)dx = -1$; Find:

a. $\int_0^6 f(x)dx = \int_0^3 f(x)dx + \int_3^6 f(x)dx$

$4 + -1$

$\boxed{3}$

b. $\int_6^3 f(x)dx = -\int_3^6 f(x)dx$

$-(-1) = \boxed{1}$

c. $\int_3^3 f(x)dx = 0$

d. $\int_3^6 -5f(x)dx = -5\int_3^6 f(x)dx$

$-5(-1) = \boxed{5}$

Preservation of Inequality

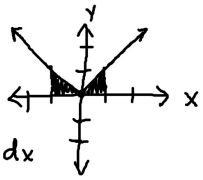
1. If f is integrable and nonnegative on $[a, b]$, then

$$0 \le \int_a^b f(x)dx$$

2. If f and g are integrable on $[a, b]$ and $f(x) \le g(x)$, then

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

7. $\int_{-1}^{1} |x|dx$



$\int_{-1}^{0} |x|dx + \int_{0}^{1} |x|dx$

$A = \frac{1}{2}bh$

$\frac{1}{2} + \frac{1}{2}$

$\boxed{1}$

HOMEWORK

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#47f - don't forget properties...

Quiz 5.3 Tomorrow