

5.4 Theorems About Definite Integrals

Name:

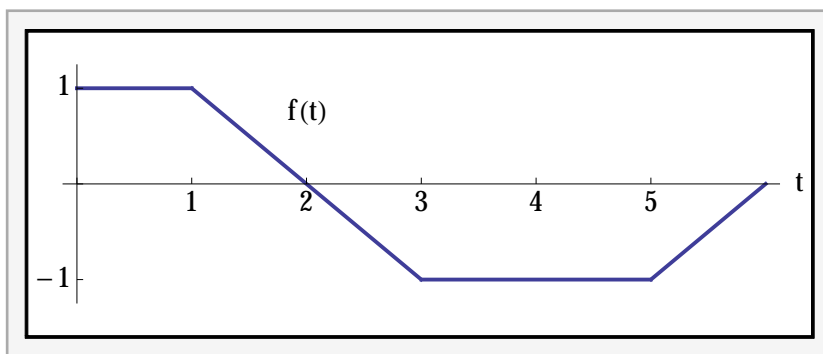
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P 1. Suppose $f'(x) = \sin(x^2)$ and $f(0) = 2$. Use a graph of $f'(x)$ to decide which is larger:

- (i) $f(0)$ or $f(1)$
- (ii) $f(2)$ or $f(2.5)$

P 3. The figure below shows f . If $F' = f$ and $F(0) = 0$, Find $F(b)$ for $b = 1, 2, 3, 4, 5, 6$.



P 4. Find the area of the region under the graph of $y = e^x$ and above $y = 1$ for $0 \leq x \leq 2$.

P 11. Find the area of the region under the graph of $y = e^{-x}$ and above $y = \ln x$ for $1 \leq x \leq 2$.

P 21. Let $\int_a^b f(x) dx = 8$, $\int_a^b (f(x))^2 dx = 12$, $\int_a^b g(t) dt = 2$, and $\int_a^b (g(t))^2 dt = 3$. Find

$$\int_a^b (f(x) + g(x)) dx.$$

P 23. Let $\int_a^b f(x) dx = 8$, $\int_a^b (f(x))^2 dx = 12$, $\int_a^b g(t) dt = 2$, and $\int_a^b (g(t))^2 dt = 3$. Find

$$\int_a^b ((f(x))^2 - (g(x))^2) dx.$$

P 30. Find $\int_2^5 f(x) dx$ given that

$$\int_2^5 (3f(x) + 4) dx = 18.$$