

Watch. Practice. Understand. | Lesson 314

Calculus 6 5 Average Value

Watch the matching video: <https://www.youtube.com/watch?v=g3S8i2IWkG8>

Practice focus: Average value of a function

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 Find the average value of $f(x)=x^2$ on $[0,3]$.

02 Find c in $[0,3]$ at which x^2 equals that average.

03 Find the average value of $\sin x$ on $[0,\pi]$.

04 Temperature is $T(t)=20+2t$ for $0 \leq t \leq 4$ hours. Find its average.

Worked answers | Lesson 314

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Original extra practice matched to the listed lesson topic.

01 Find the average value of $f(x)=x^2$ on $[0,3]$.

$$(1/3) \int_0^3 x^2 dx = (1/3)(9)=3.$$

02 Find c in $[0,3]$ at which x^2 equals that average.

$$c^2=3 \text{ gives } c=\sqrt{3}, \text{ the only nonnegative solution in the interval.}$$

03 Find the average value of $\sin x$ on $[0,\pi]$.

$$(1/\pi) \int_0^\pi \sin x dx = 2/\pi.$$

04 Temperature is $T(t)=20+2t$ for $0 \leq t \leq 4$ hours. Find its average.

$$(1/4) \int_0^4 (20+2t) dt = (80+16)/4 = 24 \text{ degrees.}$$