Calculus AB

4-4

(Day 2)

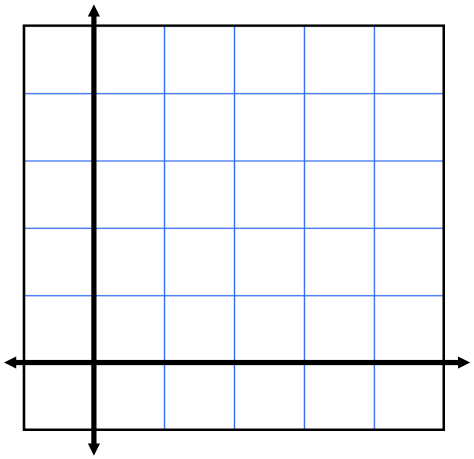
Mean Value Theorem and Average

Reviewing concepts: Mean Value Theorem for Derivatives

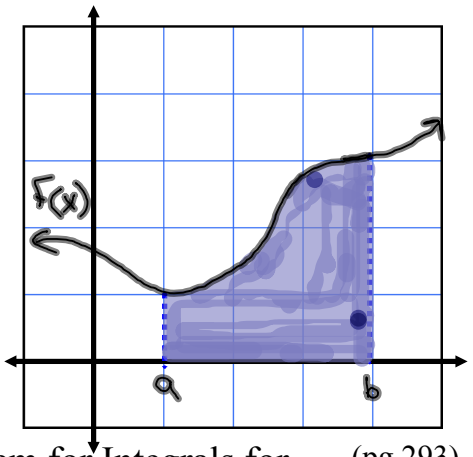
What are the two essential requirements for the Mean Value Theorem?

What does the Mean Value Theorem state?

Graphically show the Mean Value Theorem.



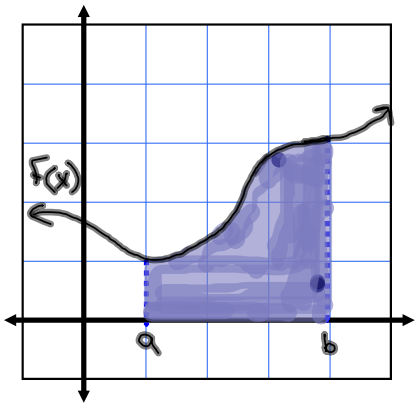
Mean Value Theorem for Integrals



Find the value(s) of c guaranteed by the Mean Value Theorem for Integrals for the function over the indicated interval? (pg 293)

50) $f(x) = \cos x$ on $[-\frac{\pi}{3}, \frac{\pi}{3}]$.

Definition of the Average Value of a Function on an interval.



Find the average value of the function over the indicated interval and all values of x in the interval for which the function equals its average value.

52) $f(x) = \dfrac{4(x^2 + 1)}{x^2}$ $\quad [\,1, 3\,]$

61) The force F (in newtons) of a hydraulic cylinder in a press is proportional to the square of $sec(x)$, where x is the distance (in meters) that the cylinder is extended in its cycle. The domain of F is $[\,0, \frac{\pi}{3}\,]$, and $F(0) = 500$.

a) Find F as a function of x.

b) Find the average force exerted by the press over the given interval.

Assignment:
Pg. 285
35 - 55, 63