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Day 37 is Monday, November 26, 2012

Quiz 9 Solutions on the Course Web Page

Exam 4 Information on the Course Web Page

Bring your O.U. Student ID to the exam tomorrow.

I will be checking them during the exam. (Sorry!)

Today Final Discussion of Section 6-5

The Fundamental Theorem of Calculus

If $F(x)$ is an antiderivative of $f(x)$,

then

$$\int_{x=a}^{x=b} f(x) dx = F(b) - F(a)$$

Applications of the Fundamental Theorem

"Total Change Problems"

We will be thinking about a function, maybe $F(x)$, and its derivative $F'(x)$.

Use these symbols to rewrite the Fundamental Theorem.

$$\int_{x=a}^{x=b} F'(x) dx = F(b) - F(a)$$

"Total change problems" involve this idea:

Given $F'(x)$ (the derivative),

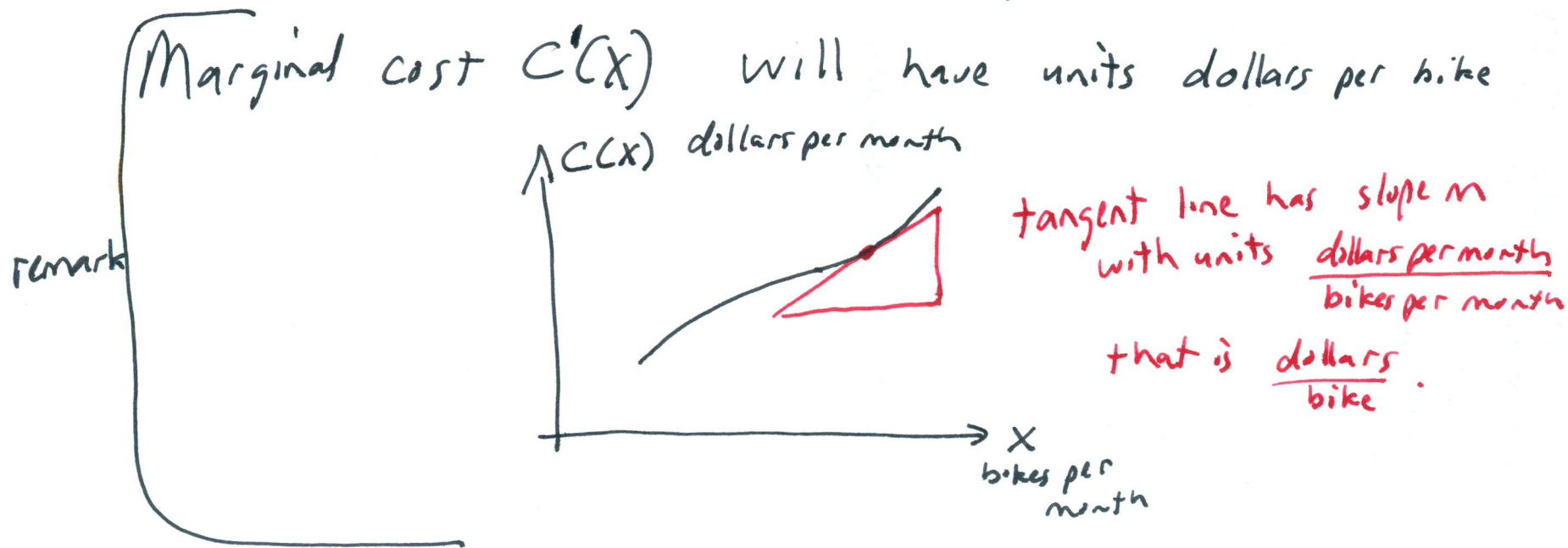
Find $F(b) - F(a) = \Delta F$ change in F .

Example #1 A company manufactures + sells mountain bikes.

Demand x is the number of bikes made in a month. (bikes per month)

Cost $C(x)$ is the cost of producing the batch of bikes. (dollars per month)

We don't know what $C(x)$ is.



Suppose that $C'(x)$ is known to be the function

$$C'(x) = 1000 - \frac{x}{2} \quad \text{for } 0 \leq x \leq 800$$

