Subject for this video: Prerequisite Skills: Computing Cost

Reading:

- **General:** Section 2.7, Marginal Analysis
- **More Specifically:** Middle of page 162 – middle of page 164, parts of Examples 1,2

Homework:

Prerequisite Skills: Computing Cost (2.7#4,5,6)

Business Terminology Introduced in Chapter 1

In our course, we will study hypothetical business examples in which a company makes and sells some item. The simplifying assumptions are

- The items are manufactured in batches.
- All of the items manufactured are sold, and they are all sold for the same price per item.

Here are definitions of two of the business-related terms that we will be using.

Business Terminology

Demand, x (small letter), is a variable that represents the number of items made. This sounds simple enough, but there can be complications. For example, in some problems, x represents the number of thousands of items made.

Cost, $C(x)$ (capital letter C), is a function that gives the cost of making the batch of x items.

In coming videos, more business terminology will be introduced.

[Example 1] (Similar to 2.7#4,5,6)

The total cost of producing x electric guitars is $C(x) = 1000 + 100x - 0.25x^2$ dollars.

(A) What is the cost of producing a batch of 50 guitars?

Solution $C(50) = 1000 + 100(50) - .25(50)^2$

$= 1000 + 5000 - .25(2500)$

$= 6000 - 625$

$= 5375$ dollars

(B) What is the cost of producing a batch of 51 guitars?

Solution

$C(51) = 1000 + 100(51) - .25(51)^2$ ← scrap paper work

$= 1000 + 5100 - .25(2601)$

$= 6100 - 650.25$ ← scrap paper work

$= 5449.75$ dollars

(C) If batch size changes from $x = 50$ guitars to $x = 51$ guitars, what will be change in the cost of producing a batch of guitars? That is, if $x = 51$ and $\Delta x = 1$, what is ΔC? (exact value)

(The book calls this quantity *the cost of producing the 51st guitar*)

Solution

$\Delta C = C(51) - C(50)$

from (B) from (A)

$= 5449.75 - 5375$

$= \$74.75$

End of [Example 1]

End of Video