

Example 1. A chain of music stores sells CDs. The demand, in hundreds of CDs, is modelled by the function: $D(x) = 56.6(0.93)^x$ where x is the price of a CD in dollars. (a) Find the function for the **rate of change** of demand function.

(b) Fill in the following table. Round numerical results in the table to three decimal places.

				Units
x	10	15	20	
Demand				
Rate of change of Demand				

Example 2.(Similar as Textbook 3.4 hw34) The tuition x years since 1990 at a University is modeled to be

$$T(x) = 25012e^{0.054x} \text{ dollars}$$

(a) Write the **rate of change** formula for tuition.

(b) Fill in the following table. Round numerical results in the table to three decimal places.

	1995	2000	2014	Units
x				
Tuition				
Rate of change of Tuition				

Example 3. (Similar as Problem36 in HW 3.1.) The global sales of the Apple iPhone between 2007 and 2013 is given by the following data.

# years since 2006	1	2	3	4	5	6	7
sales in million units	1.39	11.63	20.73	39.99	72.29	125.05	150.26

(a). Let x be the years since 2006, and let $S(x)$ be the sales of iPhones in million units. Fit the best model to the data.

(b). What is the **rate of change** of the sales model?

(c). Using the model, calculate and interpret the rate of change of sales in 2014.

Example 4. The following table gives the number of chocolate bars produced at a chocolate factory per number of Oompa-Loompas employed. Show work and give units for each answer.

$x = \#$ of Oompa-Loompas	5	10	15	20	25	30	35	40	45
Number of chocolate bars	12	18	20	20	17	15	15	18	26

(a) Let x stand for the number of Oompa-Loompas employed and let $B(x)$ stand for the number of chocolate bars produced. Fit a CUBIC MODEL to the data.

(b). What is the **rate of change** of the sales model?

(c). Using the model, calculate and interpret the rate of change of production when 11 Oompa-Loompas are employed.

Example 5. (Similar as HW19 in textbook 3.6.) The profit from the supply of a certain commodity is modeled as

$$P(q) = 36qe^{-0.3q} \text{ dollars}$$

where q is the number of units produced. (a). Write an expression for the rate of change of profit.

(b). At what production level is the rate of change of profit zero?

(c). What is profit at the production level found in part b?