Unit price $x$
Unit cost $c$, Fixed cost $F$
Demanding function $D(x)$, Revenue function $R(x)$, Cost function $C(x)$, Profit function $P(x)$.
- $R(x) = xD(x)$
- $C(x) = cD(x) + F$
- $P(x) = R(x) - C(x)$

Example 1. **Blu-ray Sales (Textbook3.6 HW 23) WebAssign 2**

A store has determined that the number of Blu-ray movies sold monthly is approximately

\[ n(x) = 6250(0.929^x) \]

movies

where $x$ is the average price in dollars.

(a). Write a model for revenue as a function of price.

\[ R(x) = 6250 \left(0.929^x\right) \cdot x \text{ dollars} \]

(b). If each movie costs the store $10.00, write a model for profit as a function of price.

\[ P(x) = 6250 \left(0.929^x\right) \cdot (x-10) \text{ dollars} \]

(c). Complete the table

\[ \frac{d}{dx}R(x) = 6250 \ln(0.929) 0.929^x (x) + 6250 (0.929^x) \]

Rates of Change of Revenue and Profit

<table>
<thead>
<tr>
<th>Price</th>
<th>Rate of change of revenue</th>
<th>Rate of change of profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$13$</td>
<td>$102,198$</td>
<td>$18,691.98$</td>
</tr>
<tr>
<td>$14$</td>
<td>$-69,212$</td>
<td>$15,723.31$</td>
</tr>
<tr>
<td>$20$</td>
<td>$-627.629$</td>
<td>$377.600$</td>
</tr>
<tr>
<td>$21$</td>
<td>$-727.548$</td>
<td>$252.760$</td>
</tr>
<tr>
<td>$22$</td>
<td>$-766.963$</td>
<td>$143.743$</td>
</tr>
</tbody>
</table>

(d). What does the table indicate about the rate of change in revenue and the rate of change in profit at the same price?