July 26, 2018

Changes to the class (continued)
- Final exam review
- Final exam problems
- Review the textbook

NOTE:
- 5 days until the final exam
- To help complete the final exam practice, Problem 8 helped
- Complete all problems you can and you will see what topics
  were covered by quickly and correctly using the ability to explain why each problem is marked as such.

6.8 (Continued)

<table>
<thead>
<tr>
<th>Year</th>
<th>Population (Billions)</th>
<th>Growth Rate</th>
<th>Population in Billions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>100</td>
<td>1.5%</td>
<td>100.15</td>
</tr>
<tr>
<td>2016</td>
<td>200</td>
<td>1.5%</td>
<td>200.30</td>
</tr>
<tr>
<td>2017</td>
<td>400</td>
<td>1.5%</td>
<td>400.60</td>
</tr>
<tr>
<td>2018</td>
<td>800</td>
<td>1.5%</td>
<td>800.90</td>
</tr>
</tbody>
</table>

Problem 11

Time Amount

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>$600</td>
</tr>
<tr>
<td>2016</td>
<td>$800</td>
</tr>
<tr>
<td>2017</td>
<td>$200</td>
</tr>
</tbody>
</table>

\[
\frac{600}{500} = \frac{6}{5} = 1.2 \%
\]

\[
\frac{800}{600} = \frac{4}{3} = 1.333\%
\]

\[
\frac{200}{800} = \frac{1}{4} = 0.25\%
\]

\[
\frac{800}{600} = \frac{4}{3} = 1.333\%
\]

\[
\frac{200}{5600} = \frac{1}{28} = 0.036\%
\]

\[
\frac{800}{5600} = \frac{1}{7} = 0.143\%
\]

\[
\frac{100}{100} = \frac{1}{1}
\]

\[
\frac{100}{100} \cdot \frac{2}{3}
\]
**July 26, 2018**

**Changes to the class (Ulmich)**
- Final Section 6.8 (p.114-115)
- Final Exam Details
- Practice for Final Exam

**NOTE:**
- 5 days until the Final Exam
- To study, complete the Final Exam Practice Problems housed in the assignment. Complete all problems one end one until you can complete each set correctly quickly and accurately. With this ability to explain why each problem is solved the way.

6.8* (Continued)

<table>
<thead>
<tr>
<th>Year</th>
<th># of people killed</th>
<th># want of people</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>200</td>
<td>100</td>
</tr>
<tr>
<td>2016</td>
<td>300</td>
<td>150</td>
</tr>
<tr>
<td>2017</td>
<td>450</td>
<td>225</td>
</tr>
<tr>
<td>2018</td>
<td>750</td>
<td>375</td>
</tr>
</tbody>
</table>

\( k = 1.5 \)

\( 675,000,000 \)

**Problem 11**

\[
 \begin{align*}
 \text{Time} & \quad \text{Amount} \\
 \text{Year} & \quad (5600) & \quad (50\%) & \quad (61\%) & \quad (64\%) & \quad (69\%) \\
 0 & 100 & 100 & 100 & 100 & 100 \\
 \hline
 \frac{5600}{100} & \frac{5600}{100} & \frac{5600}{100} & \frac{5600}{100} & \frac{5600}{100} \\
 \end{align*}
\]

\[
 \begin{align*}
 A(t) & = 100 e^{kt} \\
 A(0) & = 100 e^{k(0)} = 100 \\
 \frac{1}{A(0)} & = \frac{1}{100} e^{kt} \\
 \end{align*}
\]

\[
 \begin{align*}
 64 & = 100 e^{\frac{1}{5600}} \\
 0.64 & = e^{\frac{1}{5600}} \\
 \ln(0.64) & = \frac{1}{5600} \Rightarrow \ln(0.64) = \frac{1}{5600} \\
 \end{align*}
\]

\[
 \begin{align*}
 k & = \frac{\ln(0.64)}{5600} \\
 \end{align*}
\]
\[ \ln (0.64) = \frac{\ln (0.64)}{5600} \]

\[ \frac{5600}{\ln (0.64)} = \frac{\ln (0.64)}{5600} \cdot \frac{5600}{\ln (0.64)} = + \]

\[ \frac{5600 \ln (0.64)}{\ln (0.5)} \quad \text{Calculator} \]

\[ + = 3605.594663 \]

\[ + \approx 3600 \text{ years} \]

---

On Tuesday, July 31st

1:15 - 2:50

23 Questions

1.4, 15
2.2, 2.3, 2.4
3.1, 3.2, 3.3, 3.4
Mini-Projects 1 & 2
3.5 Mini-Projects 3
4.1, 4.3, 4.4, 4.7
5.1, 5.2, 5.3
8.1, 8.4, 8.7
6.1, 6.2, 6.3

Assessed in these sections !!!!!