Business Math: Chapter 13: Special Situations

Answer Key by Michael Reimer

1. Today → 25 Years → 25 Years ← 15 Years → 40 Years
   - Deferral Period
   - Annuity Period
   - PMT = $500 END of each Month
   - PV = ?

2. 40 back to 25 Years (END)
   - P/Y 12
   - C/Y 2
   - N 15 × 12 = 180
   - I/Y 4.85
   - PV $43542.35
   - PMT $500 (END)
   - FV $43542.35

3. Today ← 3 Years → 3 Years ← 4 Years → 7 Years (3 + 4)
   - Deferral Period
   - Annuity Period
   - I/Y = 4.85%
   - PMT = $750 Monthly
   - I/Y = 5.35% SA

4. PV = ?
   - PV = ? First Payment at 3 year anniversary = BGN Mode

5. 7 back to 3 years
   - P/Y 12
   - C/Y 2
   - N 4 × 12 = 48
   - I/Y 5.35
   - PV $32524.11
   - PMT $750 (BGN)
   - FV $32524.11
Business Math: Chapter 13: Annuities: Special Situations

Answer Key by Michael Reimer

3. Today ≤ 10 Years → 10 Years ≤ ? Years → ? = N

<table>
<thead>
<tr>
<th>Deferral Period</th>
<th>Annuity Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>I/Y = 5.32% Monthly</td>
<td>PMT = $2450 Monthly/Quarterly</td>
</tr>
</tbody>
</table>

PV = $250,000

1. FV = ? First PMT on date she retires (BGN)

Date of Retirement

2. Today to 10 years

<table>
<thead>
<tr>
<th>PMT</th>
<th>FV</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2450</td>
<td>$425,083.29</td>
</tr>
</tbody>
</table>

24 Years + 10 Months

3. 10 Years to ?

<table>
<thead>
<tr>
<th>PMT</th>
<th>FV</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2450</td>
<td>$425,083.29</td>
</tr>
</tbody>
</table>

4. Today ≤ 15 Years → 15 Years ≤ 20 Years → 35 Years (15+20)

<table>
<thead>
<tr>
<th>Deferral Period</th>
<th>Annuity Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>I/Y = 4.92% Monthly</td>
<td>PMT = ?/Month</td>
</tr>
</tbody>
</table>

PV = $150,000

1. FV = ? First PMT on the date of Retirement (BGN)

2. Today to 15 Years

<table>
<thead>
<tr>
<th>PMT</th>
<th>FV</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2450</td>
<td>$313,289.13</td>
</tr>
</tbody>
</table>

PV = $2,092.15
5. **END Mode**

- \( N \times 500 \times 1 = 500 \)
- \( i = 5.94 \%
- \( PV = 25,252.53 \)
- \( PMT = 1,500 \)
- \( FV = 0 \)
- \( P/Y = 1 \)
- \( C/Y = 1 \)

In a perpetual question, \( N \) has to be really big. So, I use 50 years \( \times P/Y \)

END mode because no mention of when the first payment is made.

6. **BEGIN Mode**

- \( N \times 500 \times 2 = 1,000 \)
- \( i = 6.23 \%
- \( PV = 450,000 \)
- \( PMT = 1510.45 \)
- \( FV = 0 \)
- \( P/Y = 2 \)
- \( C/Y = 2 \)