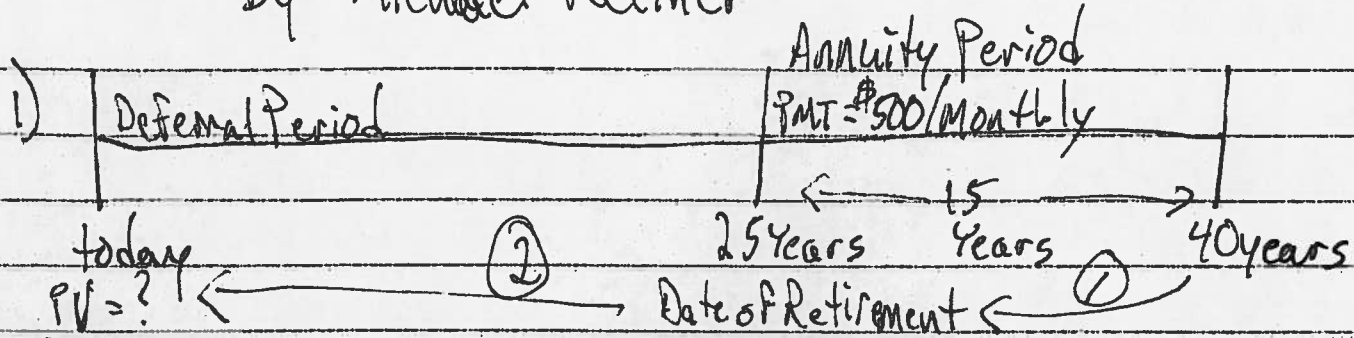


# Business Math: Chapter 13: Annuity Topics Answer Key

by Michael Reimer

(1)



①  $N 15 \times 12 = 180$

②  $N 25 \times 2 = 50$

I/Y 11.45%

I/Y 11.45%

PV ? \$43542.35

PV ? \$2691.70

PMT \$500

PMT 0

FV 0

FV \$43542.35

P/Y 12

P/Y 2

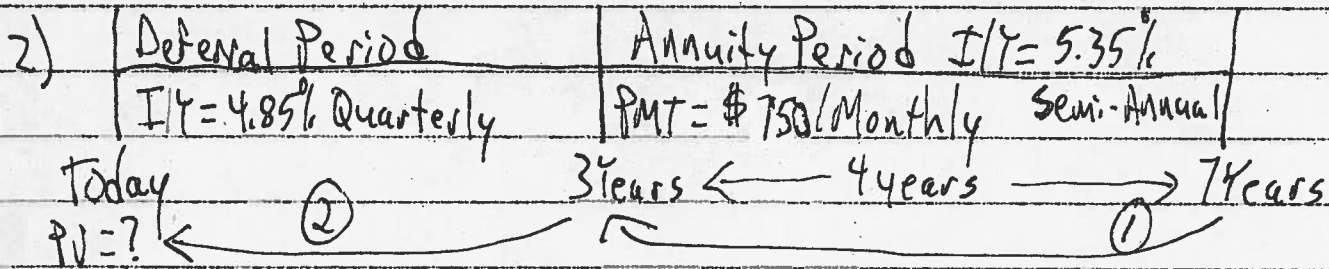
When no payments p/y must equal c/y

C/Y 2

C/Y 2

equal c/y

END Mode



①  $N 4 \times 12 = 48$

②  $N 3 \times 4 = 12$

I/Y 5.35%

I/Y 4.85%

PV ? \$32524.11

PV ? \$28144.64

PMT \$750

PMT 0

FV 0

FV \$32524.11

P/Y 12

P/Y 4

C/Y 2

C/Y 4

BGN Mode

First payment is due on the anniversary date. This means BGN Mode

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(2)

Deferral Period	Annuity Period
$i/Y = 5.32\%$ / Monthly today $PV = \$250,000$ ①	$PMT = \$2,450$ / Monthly 10 Years $i/Y = 4.87\%$ / Quarterly $? = N$ Date of $FV = ?$ Retirement ②

①  $N 10 \times 12 = 120$   
 $i/Y 5.32\%$   
 $PV \$250,000$   
 $PMT \emptyset$   
 $FV ? \$425,083.29$   
 $P/Y 12$   
 $C/Y 12$

②  $N ? 297.21 \div 12 = \boxed{24.76753575}$   
 $i/Y 4.87\%$   
 $PV \$425,083.29$   
 $PMT \$2,450$   
 $FV \emptyset$   
 $P/Y 12$   
 $C/Y 4$

$0.167535744$   
 $\times 12$   
 $\leftarrow 9.210428992$   
 $- 9$   
 $\underline{\hspace{1.5cm}}$   
 $0.210428992 \times 30 = 6$

BGN Mode First payment due on the date of retirement  
24 years 9 months 6 days

Deferral Period	Annuity Period
$i/Y = 4.92\%$ / Monthly today $PV = \$150,000$	$PMT = ?$ / Monthly 15 Years ← 20 Years → 35 Years Date of Retirement $i/Y = 5.25\%$ / Semi-Annually

①  $N 15 \times 12 = 180$   
 $i/Y 4.92\%$   
 $PV \$150,000$   
 $PMT \emptyset$   
 $FV ? \$313,289.13$   
 $P/Y 12$   
 $C/Y 12$

②  $N 20 \times 12 = 240$   
 $i/Y 5.25\%$   
 $PV \$313,289.13$   
 $PMT ? \$2,092.15$   
 $FV \emptyset$   
 $P/Y 12$   
 $C/Y 2$   
 BGN Mode

# Business Math Chapter 13: Annuity Topics Answer key

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5)	Annuity Period	Deferral Period
	PMT = \$1000/Semi-Annual	
	Today $i = 7.25\%$ / Quarterly 20 Years	30 Years
①	$N = 20 \times 2 = 40$	② Date of Retirement
	$i = 7.25\%$	
	PV $\emptyset$	② $N = 10 \times 4 = 40$
	PMT \$1000	$i = 7.25\%$
	FV ? \$87705.04	$\rightarrow$ PV \$87705.04
	P/Y 2	PMT $\emptyset$
	C/Y 4	FV ? \$179915.51
	END Mode	P/Y 4
		C/Y 4

6) Perpetual = Forever, so, we need a really big N. I use 500 Years

$N = 500 \times 1 = 500$

$i = 5.14\%$

PV ? \$25252.53

PMT \$1500

FV  $\emptyset$

P/Y 1

C/Y 1

END Mode

7)  $N = 500 \times 2 = 1000$

$i = 6.23\%$

PV \$50000

PMT ? \$1510.45

FV  $\emptyset$

P/Y 2

C/Y 2

BGN Mode