chapter 5

Financial Maths

Section 5.3 Instalment savings (annuities)

PROJECT MATHS Text & Tests 6

How many instalments?
$20(12) = 240$ months

If I save €200 each month for 20 years @ 3% AER how much will it be worth in 20 years?

MER?

$R = \sqrt[12]{1+i} - 1$

$MER = \sqrt[12]{1.03} - 1 = 2.46626 \times 10^{-3}$
$= 0.247\ \%$

$F = P(1+i)^t$

Geometric series
Sum of 240 Future values

$R = \frac{T_2}{T_1}$

$S_n = \frac{a(1-r^n)}{1-r}$

$+ F_1 = 200(1.00247)^{240}$ T_{240}
$+ F_2 = 200(1.00247)^{239}$
$+ F_3 = 200(1.00247)^{238}$
$+ \vdots$
$+ F_{239} = 200(1.00247)^{2}$ T_2
$+ F_{240} = 200(1.00247)^{1}$ $T_1 = a$

Ratio $r = 1.00247$

Total $= S_{240}$

$S_{240} = \frac{200(1.00247)(1-1.00247^{240})}{1-1.00247}$

$= €65,564.37$