Annuities

An annuity is a sequence of regular payments into an account where each payment earns compound interest.

> payment period - time between payments. We'll stick to monthly payments

> term - time from beginning of first payment until the end of the last payment.

> ordinary annuity - payment due at the end of the month.

Formula

$$FV = pymt \cdot \frac{(1+i)^n - 1}{i}$$

future value

pymt = payment

i = periodic interest rate

n = # of payments in term

TDA is a tax-deferred annuity

$200 monthy

$r = 8\frac{3}{4}\%$

$30 \longrightarrow 65$

35 years

pymt = 200

$n = 420$

$i = \frac{.0875}{12}$

$n = 35 \times 12 = 420$ payments

$$FV = 200 \cdot \frac{\left(\left(1 + \frac{.0875}{12}\right)^{420} - 1 \right)}{\left(\frac{.0875}{12} \right)} = \$552,539.96$$

on calculator $200((1 + .0875/12)^\wedge 420 - 1) / (.0875/12)$

enter

How much interest did Jim earn?

$$FV - \begin{array}{c} \text{total amt of} \\ \text{his payments} \end{array} = 552,539.96 - 200 \cdot 420$$

$$= \$468,539.96$$

Worksheet

9-14