

HW 10

#4. Present Value = \$200,000    Periodic payment = \$10,000     $i(12) = 9\%(12)$

Find the equivalent monthly interest rate

$$(1 + 0.09/12)^{12} = [1 + i(4)/4]^4$$

$i(4) = 9.07\%(4)$  is the nominal interest rate convertible quarterly

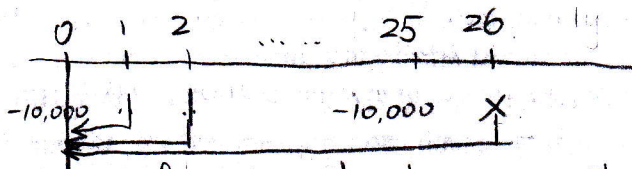
$i = 0.023$  is the interest rate each quarter

Since the man wants to withdraw the money immediately, this is an annuity due, use the present value formula:

$$P = R \frac{1 - (1+i)^{-n}}{i} (1+i)$$

$$\$200,000 = 10,000 \frac{1 - (1+0.023)^{-n}}{0.023} \cdot 1.023$$

$$n \approx 26.26 \quad n(\text{integer}) = 26$$



There are 26 full stipends \$10,000. The final stipend is X dollars. Move all the stipends to present will be equal to the amount of inheritance.

$$200,000 = 10,000 \frac{1 - (1+0.023)^{-26}}{0.023} \cdot 1.023 + X(1+0.023)^{-26}$$

$$1470.273 = X(1+0.023)^{-26} \cdot 0.023$$

$$X = \$2655.61$$

So final payment is \$2655.61

$$T \text{ is } 1.887 \text{ year}$$

$$X = 22.64 / 12 = 1.887 \text{ year}$$

$$(1 - 0.054/4)^{-X} = (1 + 0.108)^3$$

For the 5.4% (4) discount rate, there will be X (months) periods, there will be 3 (months) periods, 10.8% (4) interest rate, there will be 3 (months) periods

Use ~~the~~ equivalent rate formula;

Set T is X months. Choose term = 3X months.