12-matematica\_financeiraFULL.R

2023-05-04

## EST053 - Métodos Computacionais para Análise de Risco  
## Código da aula 12 - Revisão de Matemática Financeira  
  
## Taxa de Juros e Taxa de Desconto  
require(lifecontingencies)

0.05/(1+0.05)

## [1] 0.04761905

interest2Discount(i=0.05)

## [1] 0.04761905

## Taxa Nominal e Efetiva  
nominal2Real(i=0.06, k=12)

## [1] 0.06167781

real2Nominal(i=0.06, k=12)

## [1] 0.05841061

# converter taxa de desconto efetiva para nominal  
real2Nominal(i=0.04, k=12, type="discount")

## [1] 0.04075264

## Exercício 1  
1000\*(1-0.06/2)^12

## [1] 693.8424

annualDiscount = nominal2Real(i=0.06, k=2, type="discount")  
i = discount2Interest(annualDiscount)  
presentValue(cashFlows=1000, timeIds=6, interestRates=i, probabilities=1)

## [1] 693.8424

## Exercício 2  
pg1 = c(-500,100,200,300,250)  
t1 = 0:4  
(VP1 = presentValue(cashFlows=pg1, t=t1, i=0.05))

## [1] 241.4709

pg2 = c(-700,1000)  
t2 = c(0,2)  
(VP2 = presentValue(cashFlows=pg2, t=t2, i=0.05))

## [1] 207.0295

## Exercício 3  
i = 0.09  
n = 5  
100\*(1-(1+i)^(-n))/i

## [1] 388.9651

100\*annuity(i=0.09, n=5, type="immediate")

## [1] 388.9651

i = 0.06  
10\*1/i

## [1] 166.6667

10\*annuity(i=0.06, n=Inf)

## [1] 166.6667

i = 0.06  
n = 5  
5000\*(1+i)\*(1-(1+i)^(-n))/i

## [1] 22325.53

5000\*annuity(i=0.06, n=5, type="due")

## [1] 22325.53

## Exercício 4  
annuity(i=0.06, n=5, type="due")\*5000\*1.06^5

## [1] 29876.59

5000\*accumulatedValue(i=0.06, n=5,type="due")

## [1] 29876.59

## Exercício 5  
C = 100000  
R = C/accumulatedValue(i=0.05,n=10)  
R

## [1] 7950.457

## Exercício 6  
480\*annuity(i=0.02,n=16)+ 20\*increasingAnnuity(i=0.02,n=16)

## [1] 8711.431

(480\*annuity(i=0.02,n=16)+ 20\*increasingAnnuity(i=0.02,n=16))\*1.02^16

## [1] 11958.93

## Exercício 7  
1200\*annuity(i=0.06,n=12,m=1,type="immediate")

## [1] 9491.144

1200\*annuity(i=0.06,n=12,m=2,type="due")

## [1] 9491.144