N=1000

T=20 a

K = ? Polygon.

y(0) = 10%

y(1) = 8%

B(t) = 1000

a) $1000 = K \sum_{i=1}^{20} e^{\frac{-0.1i}{2}} + 1000 e^{-0.1 \cdot 20}$

$1000 - 1000 e^{-0.1 \cdot 20} = K \sum_{i=1}^{20} e^{\frac{-0.1}{2} \cdot i}$

$864.66 = K \cdot 16.86$

$K = 51.28$ ✓

b) $B(1,20) = 51.28 \sum_{i=1}^{20} e^{\frac{-0.05}{2} \cdot i} + 1000 e^{-0.05 \cdot 10}$

$= 1200.42$ ✓

c) [illegible]

$B(0.5,20) = 1200.42 + 51.28 = 1251.7$ ✓

T = 5
K = 6.5%
Y = 0.5%
N = 100

$$C = 6.5 \sum_{i=1}^{5} e^{-0.005 \cdot i} + 100\, e^{-0.005 \cdot 5} = 102.27$$

NAKON 2 GOD.

$$D = \frac{1 \cdot Ke^{-Y \cdot 1} + 2 \cdot Ke^{-Y \cdot 2} + 3(K+N)e^{-Y \cdot 3}}{C} = \frac{288.2}{102.27} = 2.82$$

$$\text{MOD. DUR} = +e^{-r} \cdot D = 2.67$$

$D_A = 2$
$D_B = 3.4$
$C_A = 0.98$
$C_B = 1.02$
$M = 5000$
$D = 6$

$$D = W_A D_A + W_B D_B$$

$$6 = W_A \cdot 2 + (1 - W_A) \cdot 3.4 = 2W_A + 3.4 - 3.4W_A$$

$$2.6 = -1.4 W_A$$

$$W_A = -1.85 \Rightarrow W_B = 2.85$$

5. $D_A = 2$

$D_B = 3.4$

$C_A = 0.98$

$C_B = 1.02$

$W = 5000$

$D = 6$

$D = W_A D_A + W_B D_B$

$6 = W_A \cdot 2 + (1 - W_A) \cdot 3.4 = 2W_A + 3.4 - 3.4W_A$

$2.6 = -1.4 W_A$

$W_A = -1.85 \Rightarrow W_B = 2.85$

$$\#_A = \frac{5000 \cdot -1.85}{0.98} = -9438.92$$ ✓

$$\#_B = \frac{5000 \cdot 2.85}{1.02} = 13970.59$$ ✓

1.02 ✓

7. INV = 20000
D = 2
$T_A = T_B = 2$
$N_A = 100$
$Y_A = 20$
$N_B = 500$
$Y_B = 5$
Y = 8%

$$D_A = \frac{1.20e^{-0.08 \cdot 1} + 2(20+100)e^{-0.08 \cdot 2}}{20e^{-0.08} + 120e^{-0.08 \cdot 2}} = \frac{222.98}{120.72} = 1.85$$

$$D_B = \frac{1.5e^{-0.08 \cdot 1} + 2 \cdot 505 e^{-0.08 \cdot 2}}{5e^{-0.08} + 505e^{-0.08 \cdot 2}} = \frac{865.28}{434.95} = 1.99$$

$$2 = W_A D_A + W_B D_B$$

$$2 = W_A \cdot 1.85 + 1.99(1 - W_A)$$

$$0.01 = -0.14 W_A$$

$$W_A = -0.0714 \quad W_B = 1.0714$$

$$\#_A = \frac{20000 \cdot W_A}{120.72} = +11.83$$

$$\#_B = \frac{20000 W_B}{434.95} = 49.26$$

$C_A(2) + 2 \cdot 20 + 100 = 140$

$C_B(2) = 2 \cdot 5 + 500 = 510$

$V(2) = \#_A \cdot 140 + \#_B \cdot 510 = 23491.\overline{5}$ ✓

8.

$t = 3 \Rightarrow 0 = 3$

$V(3) = 100000$

$Y(0) = 12\%$

$N_A = 100$

$T_A = 5$

$K_A = 10$

$T_B = 1$

$N_B = 100$

$Y(1) = 14\%$

$Y(2) = 16\%$

$100000 \cdot e^{+0.12 \cdot 3} = 69767.63$ - POČETNI KAPITAL

$$D_A = \frac{10e^{-0.12 \cdot 1} + 20e^{-0.12 \cdot 2} + 30e^{-0.12 \cdot 3} + 40e^{-0.12 \cdot 4} + 5(10+100)e^{-0.12 \cdot 5}}{10 \sum_{i=1}^{5} e^{-0.12 \cdot i} + 100e^{-0.12 \cdot 5}}$$

$$= \frac{372.13}{90.27} = 4.12$$

$$D_B = \frac{1 \cdot 100e^{-0.12 \cdot 1}}{100e^{-0.12}} = 1$$ - ZER JE BESKUPONSKA

$t = 0$

$t=0$

$$D = v_{1A} D_A + v_{1B} D_B$$

$$3 = v_{1A} \cdot 4.82 + (1 - v_{1A})$$

$$2 = 3.82\, v_{1A}$$

$$v_{1A} = 0.64 \Rightarrow v_{1B} = 0.36$$

$$\#_A = \frac{69767.63 \cdot 0.64}{90.24} = 494.64$$

$$\#_B = \frac{69767.63 \cdot 0.36}{100 e^{-0.12}} = 283.19$$

$$\#_B = \frac{69767.63 \cdot 0.36}{100 e^{-0.12}} + 283.19$$

$t = 1$

DO A DOBIJEM $10 \cdot \#_A = 4946.4$

DO B DOBIJEM $100 \cdot \#_B = 28319$

$y = 14\%$!!!

NOVA $C_A = 10 \sum_{i=1}^{4} e^{-0.14} + 100 e^{-0.14} = 85.65$

OSTATAK A VRIJEDI $85.65 \cdot \#_A = 42365.92$

UKUPNO IMAM $4946.4 + 28319 + 42365.92 = 75631.32$

NOVA $D_A = \dfrac{10e^{-0.14} + 20e^{-0.14\cdot 2} + 30e^{-0.14\cdot 3} + 4(10+100)e^{-0.14\cdot 4}}{C_A}$

$= \dfrac{294.85}{85.65} = 3.44$

NOVA $C_B = 100e^{-0.14} = 86.94$; D_B OSTAJE 1

$D = 2$ (PROŠLA 1 GODINA)

$2 = W_A D_A + W_B D_B$

$2 = W_A \cdot 3.44 + (1 - W_A)$

$1 = 2.44\, W_A$

$W_A = 0.41 \quad W_B = 0.59$

$\#_A = \dfrac{95631.32 \cdot 0.41}{85.65} = 362.04$ } DA SI TO IMA

$$\#_A = \frac{95631.32 \cdot 0.41}{85.65} = 362.04$$

$$\#_B = \frac{75631.32 \cdot 0.59}{86.94} = 513.26$$

DA BI TO IMAO PODATAKA
434.65 - 362.04 = 132.61
OBVEZ. A I KUPUJEM
513.26 OBV. B (JER SU 1 GOD

$t=2$. OD A DOBIJEM $10 \cdot \#_A = 3620.4$

$\gamma = 16\%$!! OD B DOBIJEM $100 \cdot \#_B = 51326$

NOVA $C_A = 10 \sum_{i=1}^{3} e^{-0.16i} + 100 e^{-0.16 \cdot 3} =$ 83.85

OSTATKA A = $\#_A =$ 30359.05

UKUPNO = 85303.45

NOVA $D_A = \frac{10e^{-0.16} + 20e^{-0.16 \cdot 2} + 3(10+100)e^{-0.16 \cdot 3}}{C_A} = \frac{827.21}{\quad} =$

$D_B = 1$ $\quad C_B = 100e^{-0.16} = 85.21$

$100 \cdot \#_B = 51326$

NOVA $C_A = 10 \sum_{i=1}^{3} e^{-0.16i} + 100 e^{-0.16 \cdot 3} = 83.85$

OSTATKA $A = \#_A = 30359.05$

UKUPNO $= 85303.45$

NOVA $D_A = \dfrac{10e^{-0.16} + 20e^{-0.16 \cdot 2} + 3(10+100)e^{-0.16 \cdot 3}}{C_A} = \dfrac{227.21}{83.85} = 2$

$D_B = 1 \qquad C_B = 100 e^{-0.16} = 85.21$

$D = 1$ (PROŠLE 2 GOD.) $\Rightarrow$ ULAŽEM SVE U B JER $\neq D_B$ - TRAŽENA

$W_B = 1 \qquad 85303.45$

$\#_B = \dfrac{85303.45}{85.21} = 1001.097$

U $t=3$ IMAM $100 \cdot \#_B = 100109.7$ (A PLANIRAO IMATI 100000)

PROFIT!