Financial Mathematics for Insurance 2012/2013
Tutorial Questions for Week I.

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1. Immunized Portfolio
4587 bonds A
5187 bonds B

2. **Uncertain Annuity**

a) 95.13
b) 40756 (or 40774 for different interpolation method)
c) 38387
d) A(EX)>EA(X) with A(x) the annuity value for death at age x and X the (stochastic) age at death; notice that A is concave !

3. Perpetual Annuity
D=1+(1/r) and DM=1/r

4. **Forward Starting Annuity**

a) $(A/r)(1-(1+r)^{-l})(1+r)^{-k}$

5. **Effect of Illiquidity Premium**

a) 40463
b) -2.3%
c) -4.1%

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Tutorial Questions for Week II.

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1. (a) 5.2500% 5.5000% 5.7597% 6.0192% (b) 6.2762%
   (c) 5.7503% 6.0151% 6.2762% (d) 99.6259

2. (a) 9.08% (b) 8.79% (c) 8.79%

3. 4.700% 4.777% 4.819% 4.854% 4.886%

4. $N * (1+z(t,j))^{(-(j-t))} * [(1+f(t,i,j))^{(j-i)} - (1+f_d)^{(j-i)}]$

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Tutorial Questions for Week III.

1. (a) 7.96 (b) sell 1602 stocks (d) 8.18

2. (a)

Probabilities under p

					4%
				7%	17%
			14%	27%	32%
		27%	39%	37%	30%
	52%	50%	36%	23%	14%
100%	48%	23%	11%	5%	3%

(b)

Deflator					0,83
				0,86	0,89
			0,90	0,93	0,96
		0,93	0,96	0,99	1,03
	0,96	1,00	1,03	1,06	1,10
1	1,03	1,07	1,10	1,14	1,18

3. (b) Put 6.11 Call 1.85 (d) 7.17

Financial Mathematics for Insurance 2012/2013
Tutorial Questions for Week IV.

1. (a) 10130 euro

2.
(a)

					0.0199
				0.0447	0.1040
			0.0990	0.1842	0.2160
		0.2162	0.3022	0.2837	0.2235
	0.4673	0.4360	0.3073	0.1937	0.1151
1.0000	0.4673	0.2198	0.1040	0.0495	0.0237

(b) 1.000 0.9346 0.8721 0.8125 0.7559 0.7022;
7.00% 7.08% 7.17% 7.25% 7.33%
(c) 7.30%
(e) 1.29%

3. 0,129%