

```

zeroCoupon[interest_, timeToMaturity_] = e-interest timeToMaturity
e-interest timeToMaturity
durZeroCoupon[interest_, timeToMaturity_] =
D[zeroCoupon[interest, timeToMaturity], interest]
-e-interest timeToMaturity timeToMaturity
convZeroCoupon[interest_, timeToMaturity_] =
D[durZeroCoupon[interest, timeToMaturity], interest]
e-interest timeToMaturity timeToMaturity2
matchingMix =
Solve[{a zeroCoupon[r, s] + b zeroCoupon[r, l] == zeroCoupon[r, m],
a durZeroCoupon[r, s] + b durZeroCoupon[r, l] == durZeroCoupon[r, m]}, {a, b}]
{{a -> - $\frac{e^{-m r+r s} (1-m)}{-1+s}$ , b -> - $\frac{e^{l r-m r} (-m+s)}{1-s}$ }}
kortVekt = a /. matchingMix[[1]]
langVekt = b /. matchingMix[[1]]

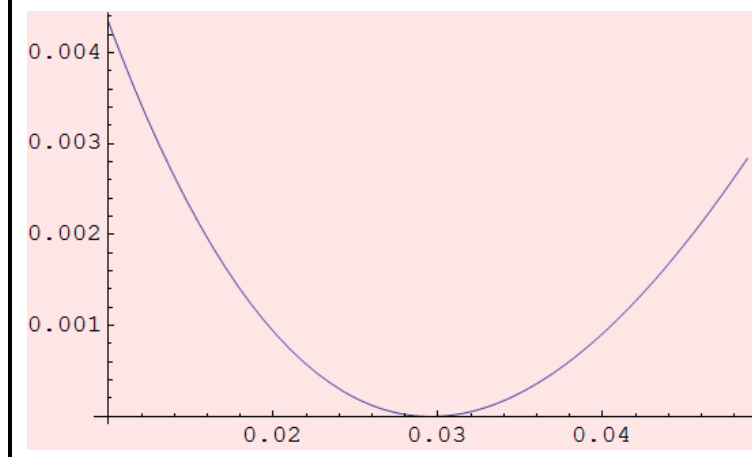
$$-\frac{e^{-m r+r s} (1-m)}{-1+s}$$



$$-\frac{e^{l r-m r} (-m+s)}{1-s}$$

Simplify[kortVekt convZeroCoupon[r, s] + langVekt convZeroCoupon[r, l] -
convZeroCoupon[r, m]]
e-m r (1 - m) (m - s)
s = 5
m = 10
l = 15
r = Log[1.03]
kortVekt
langVekt
5
10
15
0.0295588
0.431304
0.579637

```

```
Plot[kortVekt zeroCoupon[rVar, s] + langVekt zeroCoupon[rVar, l] -  
      zeroCoupon[rVar, m], {rVar, Log[1.01`], Log[1.05`]}]
```



 Created with Wolfram Mathematica 6