

This is the same as extra exercise 3 but with a decreasing spot rate.

This is the definition of the force of mortality for the G82M table.

```
> m := t ->  
0.0005+0.00007585775*10^(0.038*t) ;
```

$$m := t \rightarrow 0.0005 + 0.00007585775 \cdot 10^{(0.038 t)}$$

We calculate its value at the age of 30, to check if it agrees with the table.

```
> evalf(m(30)) ;
```

0.001547128445

```
> evalf(0.00007585775*10^(0.038*35.5)/(0.038*  
ln(10))) ;
```

0.01936424959

```
> p := t ->  
exp(-0.0005*t-.1936424959e-1*(10^(0.038*t)-  
1)) ;
```

$$p := t \rightarrow e^{(-0.0005 t - 0.01936424959 (10^{(0.038 t)} - 1))}$$

```
> evalf( Int(  
exp(-(0.04+0.03*exp(-0.03*t))*t)*p(t),
```

```
t=0..29.5 ));
```

13.33434419

```
> evalf( Int(
exp(-(0.04+0.03*exp(-0.03*t))*t)*p(t),
t=29.5..90 ));
```

1.761665923

```
> evalf( Int(
exp(-(0.04+0.03*exp(-0.03*t))*t)*p(t)*m(t+3
5.5), t=0..29.5 ));
```

0.08113808997

```
> evalf((30000*1.761665923+100000*.8113808997
e-1)/13.33434419)
> ;
```

4571.937384

It is more expensive.