$$MD=\left[ \frac{(1+\frac{y}{k})}{y/k}- \frac{100\left(1+\frac{y}{k}\right)+m(\frac{c}{k}=\frac{100y}{k})}{\left(\frac{c}{k}\right)\left[\left(1+\frac{y}{k}\right)^{m}-1\right]+\frac{100y}{k}}\right]/ k$$

where*:*

 *P* is the principal

 *N* the number of coupons

 *Ci* the coupon paid on date *ti*

$$PV=\left[ \frac{(1+\frac{y}{k})}{y/k}- \frac{100\left(1+\frac{y}{k}\right)+m(\frac{c}{k}=\frac{100y}{k})}{\left(\frac{c}{k}\right)\left[\left(1+\frac{y}{k}\right)^{m}-1\right]+\frac{100y}{k}}\right]/ k$$