

# Calculo TIR

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```
source("C:/Users/Dell3000/Desktop/Facu/Analisis numerico/Analisis_numerico_Bacchini/Semana 2/Busqueda_r
```

Inputs

```
cupon=0.05
amortizaciones=matrix(c(1,2,3,4,25,25,25,25),ncol=2,dimnames=list(NULL,c("t","Amort")))

PM=80

m=2 #Numero de pagos de intereses por año
```

Marcha progresiva

```
n=max(amortizaciones[,1])*m
#Creo matriz de marcha
marcha=matrix(rep(NA,(n+1)*5),ncol=5)
colnames(marcha)=c("t","Saldo","Amort","Int","CF")
#Columna t
marcha[, "t"]=seq(from=0,to=n/m,by=1/m)
#Columnas amort y saldo
k=1
marcha[1,"Saldo"]=sum(amortizaciones[, "Amort"])
for (i in 1:(n+1)){
  if(marcha[i,"t"]==amortizaciones[k,"t"]){
    marcha[i,"Amort"]=amortizaciones[k,"Amort"]
    if(i>1){marcha[i,"Saldo"]=marcha[i-1,"Saldo"]-amortizaciones[k,"Amort"]}
    k=k+1}
  else{
    marcha[i,"Amort"]=0
    if(i>1){marcha[i,"Saldo"]=marcha[i-1,"Saldo"]}
  }
}
#Columna int
marcha[1,"Int"]=0
for(i in 2:(n+1)){
  marcha[i,"Int"]=marcha[i-1,"Saldo"]*cupon/m
}
marcha[, "CF"]=marcha[, "Amort"]+marcha[, "Int"]
```

Funcion de precio

```

precio=function(tasa,t,CF){
  n=length(CF)
  p=0
  for(i in 1:n){
    p=p+CF[i]*(1+tasa)^-t[i]
  }
  return(p)
}

precio(0.05,marcha[, "t"],marcha[, "CF"])

```

```
## [1] 100.1402
```

```

#para saber si esta ok paso la TEA a TNA (ver segun pago de intereses)
tasa1=(1+0.05/2)^2-1
precio(tasa1,marcha[, "t"],marcha[, "CF"])

```

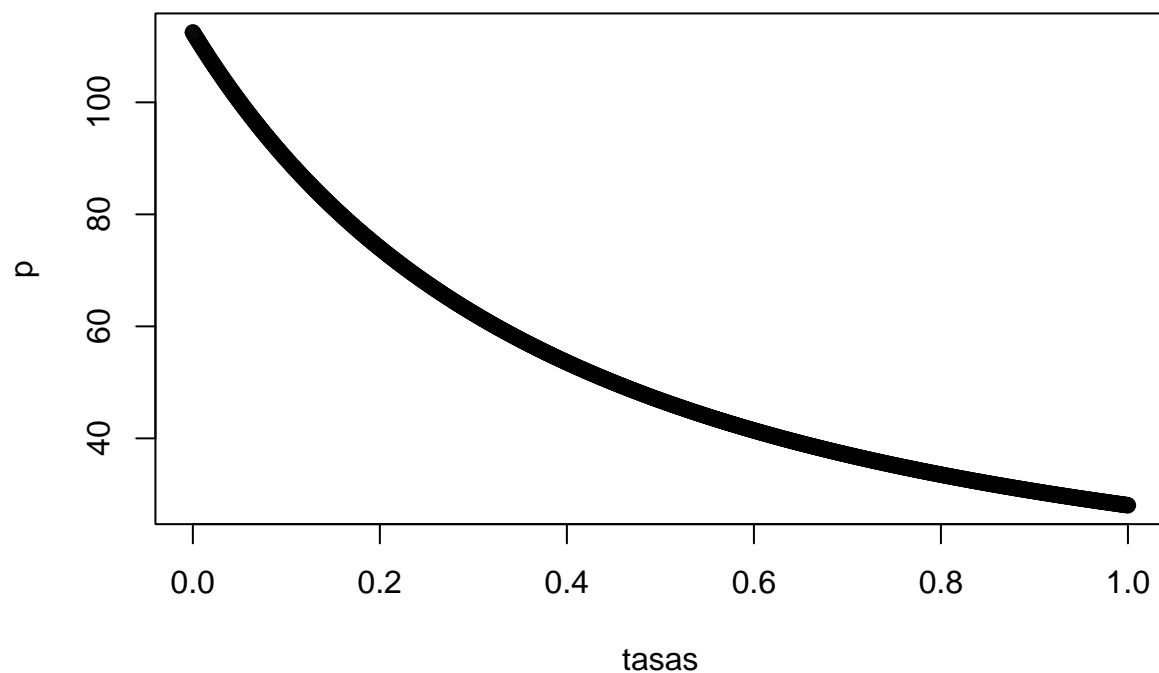
```
## [1] 100
```

grafico de las tasas

```

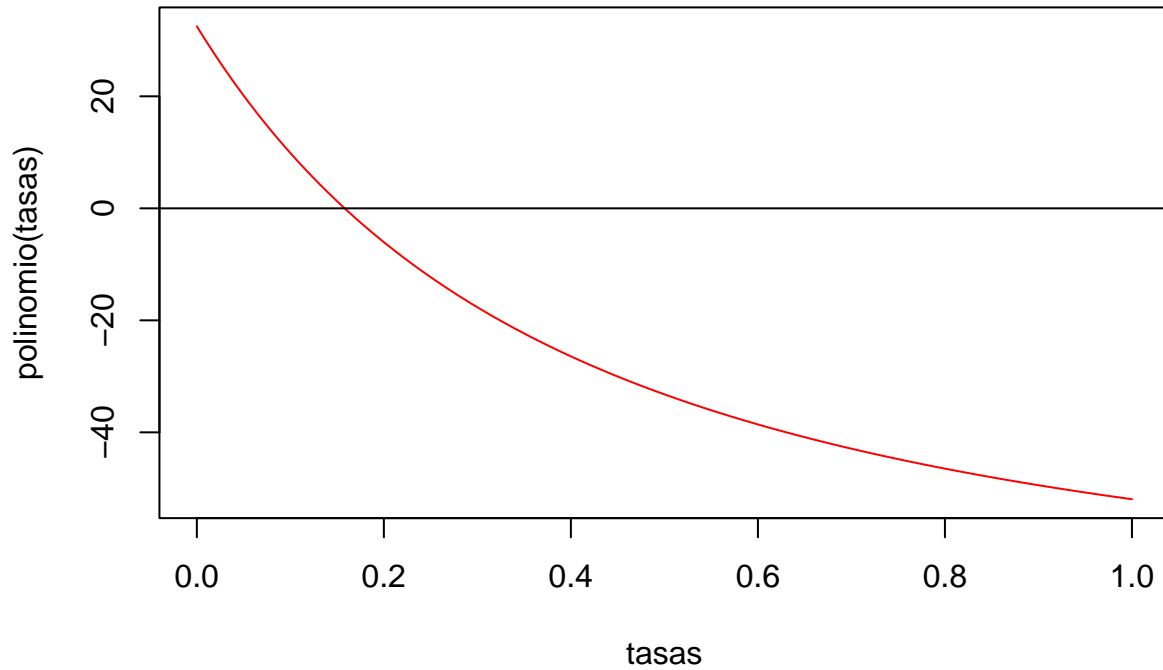
tasas=seq(0,1,0.001)
p=precio(tasas,marcha[, "t"],marcha[, "CF"])
plot(tasas,p,type="b")

```



Resolucion de la ecuacion

```
polinomio=function(r){return(-PM+precio(r,marcha[, "t"],marcha[, "CF"]))}  
plot(tasas,polinomio(tasas),type="l",col="red")  
abline(h=0)
```



```
raiz_biseccion(polinomio,0,0.2,10-6,100)
```

```
## [1] 0.1580818
```