

The Secant method

Solution of non-linear equations

```
secant(fun , iter)
{
  1 NN:= iter
  2 eps:= 0.00001
  3 maxval:= 10000
  4 xx:= -10
  5 xxx:= -9.8
  6
  while(NN> 0)
  {
    1 a:= replace symbols(fun , x , xx)
    2 b:= replace symbols(fun , x , xxx)
    3 gp:= (b - a)/(xxx - xx)
    4 xn:= xx - replace symbols(fun , x , xx)/gp
    if(fabs(replace symbols(fun , x , xn)) < eps)
    {
      1 mny:= allocate vector(2 , true)
      5 2 mny= set value at(mny , "iteration: " + to string(100 - NN) , 0 , 0)
      3 mny= set value at(mny , xn , 0 , 1)
      4 return(mny)
    }
    if(fabs(replace symbols(fun , x , xx)) > maxval)
    6 {
      1 return("Function has no zeros")
    }
    7 NN -= 1
    8 xx = xxx
    9 xxx = xn
    10
  }
  8 return("The number of steps is higher than anticipated")
}

c:= 100
b:= x3 - 2 x2 + 1
a:= secant(b , c)
a = ["iteration: 11" -0.618]
```