The Newton - Raphson method

Solution of non-linear equations

```
newton(fun , iter)
{
  NN := iter
  eps := 0.00001
  maxval := 10000
  xx := 2

  izv := d/dx fun

  while(NN > 0 )
  {
    a := replace symbols(fun , x , xx)
    b := replace symbols(izv , x , xx)
    xn := xx - a / b
    if( fabs(replace symbols(fun , x , xn)) < eps )
    {
      mny := allocate vector(2 , true)
      mny = set value at(mny , "Iteration: " + to string(100 - NN) , 0 , 0)
      mny = set value at(mny , xn , 0 , 1)
      return(mny)
    }
    if( fabs(replace symbols(fun , x , xx)) > maxval )
    {
      return("Function has no zeros")
    }
    NN -= 1
    xx = xn

  }
  return("The number of steps is higher than anticipated")
}
```

```
c := 100
b := x^3 - 2 x^2 + 1
a := newton(b , c)
a = ["Iteration: 3"  1.618]
```