Introduction to R

Ex. 1. Create your own folder. Set this directory as a working directory.
Instructions: `getwd`, `setwd`

Ex. 2. Check the instruction
```
x = (1:5-1)
```
Create a vector of even numbers from 2 to 24.

Ex. 3. Check the instruction
```
x[1:2]
x[-2]
```
Create `y` vector:
1. including elements of `x` vector in reverse order reduced by 5,
2. including first three elements of `x`,
3. including all elements of `x` vector except four first elements.

Instruction: `rev`.

Ex. 4. Create `x`, `y` with the same length equaled 3. Calculate:
1. the sum of all elements of `x` and `y`,
2. scalar product.

Instruction: `sum`.

Ex. 5. Draw the scatter plot of `y` depending on `x`. Set titles for plot and axes.
Instruction: `plot`.

Ex. 6. Check the instructions
```
x = c(2,5,6,1,8)
y = x[x>5]
```
Create `y` vector:
1. including even elements of `x` vector,
2. including elements of `x` vector with even indexes.

Instructions: `length`.

Ex. 7. Using `rank` instruction create `y` vector that is ordered vector of `x` (ascending order).

Ex. 8. Check `sample` instruction
1. for `x` vector including numbers from `1` to `20` (integer numbers) generate random permutation of this vector,
2. for any vector with length of 3 generate a sample with number of elements:
a. less than the length of a vector,
b. greater than the length of a vector.
Each element of the vector should be assigned to the probability with which the element occurs.

Ex. 9. Generate a vector with 50 elements from normal distribution `N(0,2)`. Plot the histogram with different number of classes/bands.

Ex. 10. Check instructions: `rbind`, `cbind`:

```
cbind(1:2,1:10)
rbind(1:2,1:10)
cbind(rbind(1:2,1:4),rbind(4:6,7:9))
m = cbind(1,1:7)
m = cbind(m,8:14)[,c(1,3,2)]
```

Ex. 11. Create a function that returns the smallest element of a vector and indexes of elements with the smallest value

```
func = function(){}
fix(func)

function(x)
{
wyn = list(wart=NULL,indeks=NULL);
wyn$wart = min(x);
for ( i in 1:length(x) )
{
if ( x[i]==min(x) )
{
wyn$indeks = c(wyn$indeks,i);
}
}
return(wyn);
}
# additional line at the end
x = c(2,1,3,3,4,1,2,3,5,6,1)
zm = func(x)
zm
zm$wart
zm$indeks
zm$indeks[2]
```