1) Using tables or a computer, for a zero-mean Gaussian distribution, determine the probability that x (the indepenant variable) exceeds 1σ, 2σ, 3σ, 4σ.

I am going to assume that you are looking for the complement to the integral of the the gaussian distribution between -$\alpha\sigma$ and +$\alpha\sigma$ where α equals 1, 2, 3, and 4. This can be done by finding the difference between the CDF function for the distribution evaluated at the two different points.

The code to determine the integral is defined below:

```
getNormIntegral = function(x, sd = 1) {
  res = pnorm(x*sd, sd = sd) - pnorm(-1*x*sd, sd = sd)
  return(1.0 - res)
}
```

Number of σ	Probability to Exceed
1	`getNormIntegral(1)` = 0.3173
2	`getNormIntegral(2)` = 0.0455
3	`getNormIntegral(3)` = 0.0027
4	`getNormIntegral(4)` = 0.0001