통계적 시뮬레이션 HW1

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1. (1) binomial\_inverse(100, 5, 0.2)  
   [1] 2 0 0 3 0 0 1 1 2 0 2 2 1 0 1 0 1 2 2 3 0 0 1 2 0 0 1 0 1 1 0 2 0 2 0 2 1 2 2 1 1 1 3 0 1 2 0 2 2  
     
   (2) binomial\_transform(100,5,0.2)  
   [1] 2 0 2 0 0 1 1 2 1 1 2 1 0 0 2 0 0 0 0 0 3 1 2 0 2 1  
     
   (3)  
   > print(paste("inverse transformation mean: " , mean,"//Compare with theoreotical mean: ", mean - size\*p))  
   [1] "inverse transformation mean: 1.07 //Compare with theoreotical mean: 0.0700000000000001"  
   > print(paste("inverse transformation var: ", var, "//Compare with theoreotical var: ", var - size\*p\*(1-p)))  
   [1] "inverse transformation var: 0.995050505050505 //Compare with theoreotical var: 0.195050505050505"  
     
   > print(paste("transformation mean: " , mean,"//Compare with theoreotical mean: ", mean - size\*p))  
   [1] "transformation mean: 1.21 //Compare with theoreotical mean: 0.21"  
   > print(paste("transformation var: " , var, "//Compare with theoreotical var: ", var - size\*p\*(1-p)))  
   [1] "transformation var: 0.854444444444444 //Compare with theoreotical var: 0.0544444444444444"
2. pois(100,2)  
   [1] 2 1 0 1 4 1 3 1 1 0 0 1 0 1 0 4 1 1 2 1 1 1 6 2 2 1 1  
   > print(paste("mean: ", mean(pois(100, 2))))  
   [1] "mean: 2.08"  
   > print(paste("var: " , var(pois(100, 2))))  
   [1] "var: 1.67383838383838"
3. (1)  
   func(1000)  
   [1] 0.308047643 0.976252743 0.029498558 -0.577568803 0.865781908 0.018087489 0.266687459 -0.257806220  
   [9] 0.130875458 -0.255632751 0.807198695 -0.748426720 0.764967146 0.920066460 -0.248827342 0.643648224  
   > X = func(1000)  
   > print(paste("mean: ", mean(X)))  
   [1] "mean: 0.357121321560983"  
   > print(paste("var: " ,var(X)))  
   [1] "var: 0.212760911481555"  
     
   (2)  
   > Y = X^2  
   > print(paste("mean: ", mean(Y)))  
   [1] "mean: 0.340083788883537"  
   > print(paste("var: " ,var(Y)))  
   [1] "var: 0.0928085893576951"
4. (1)  
   > min\_c = 3/2  
     
   (2)  
   > print(paste("mean: ",mean(X)))  
   [1] "mean: 0.50641487325076"  
   > print(paste("var: " ,var(X)))  
   [1] "var: 0.0442721949840937"  
     
   (3)  
   > trials / 100  
   [1] 1.49
5. 