Problems Sheet 4

Statistics 2

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Question 4

```
cdf.poisson.mle<-function(v,lambda,n) {
  ppois(n*v, lambda=n*lambda)
}

cdf.poisson.np<-function(v,lambda,n,N) {
  poisson.mles <- sapply(1:100, function(i) mean(rpois(n, lambda = lambda)))
  # Count number of samples less than each value in v, normalise
  counts <- sapply(v, function(i) sum(poisson.mles<i)/N)
  counts
}

n <- 12; lambda <- 3.2; N <- 100
v <- seq(from = 1, to = 5, length = 1001)
plot(v, cdf.poisson.mle(v, lambda = lambda, n = n), type = "l", main = "CDF of the ML estimator for lam
abline(v = lambda, col = "darkgreen")
text(lambda, 0, labels = "True value of lambda", pos = 4, col = "darkgreen")

lines(v, cdf.poisson.np(v,lambda=lambda,n=n,N=N), type = "l",col="red",lty=6)
legend(x=1,y=1,legend=c("CDF of the ML estimator","Non-Parametric Estimator of CDF"),col=c("black","red
```