

Math 159 – Kolmogorov-Smirnov

$H_0 : F(t) = G(t)$ versus $H_A : F(t) \neq G(t)$ for some t

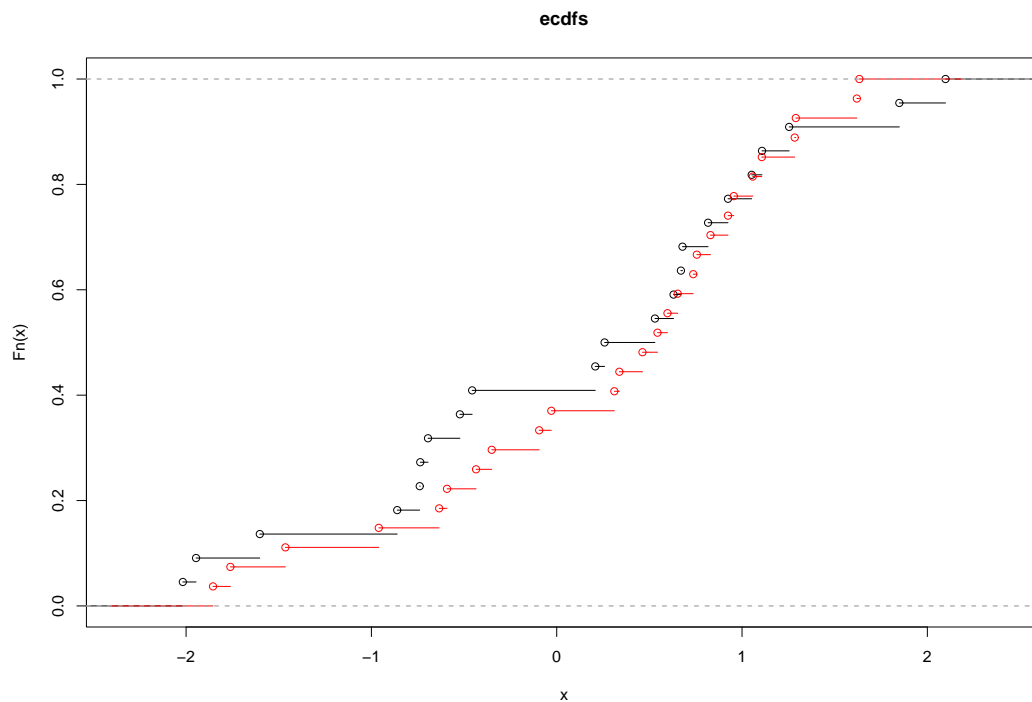
```
> x<-rnorm(22)
> y<-rnorm(27)
>
> Fhat<-ecdf(x)
> Ghat<-ecdf(y)
>
> plot(Fhat,main='ecdfs')
> lines(Ghat,col.hor=2,col.points=2)
>
> ks.test(x,y)
```

Two-sample Kolmogorov-Smirnov test

data: x and y

$D = 0.1869$, p-value = 0.7109

alternative hypothesis: two-sided



Tests of Normality

```
> source('http://www.cs.pomona.edu/~john/159/R/looney.R')
>
> nsim<-1000
> psw<-pks<-pl<-rep(0,nsim)
>
> n<-30
>
> for( i in 1:nsim ) {
+     x<-rnorm(n)
+     psw[i]<-shapiro.test(x)$p.value
+     pks[i]<-ks.test(x,'pnorm')$p.value
+     pl[i]<-looney(x)$pval
+ }
>
> mean(psw<0.05)
[1] 0.049
> mean(pks<0.05)
[1] 0.047
> mean(pl<0.05)
[1] 0.05

> nsim<-1000
> psw<-pks<-pl<-rep(0,nsim)
>
> n<-30
>
> for( i in 1:nsim ) {
+     x<-rt(n,4)
+     psw[i]<-shapiro.test(x)$p.value
+     pks[i]<-ks.test(x,'pnorm')$p.value
+     pl[i]<-looney(x)$pval
+ }
>
> mean(psw<0.05)
[1] 0.331
> mean(pks<0.05)
[1] 0.055
> mean(pl<0.05)
[1] 0.377
```