Math 159, Spring 2005
Professor Hardin
HW #11
due Tuesday 5/03/05

Chapter 18: 24, 30, 32, 35, 76, 77 (use BCa)

1. Prove the transformation respecting property of the percentile interval.
2. Explain why it makes sense that having 1118 out of 2000 $\hat{\theta}^*$ values less than $\hat{\theta}$ leads to a positive bias correction.

- 95% BCa interval

```
test.stat.jk<-c()
test.stat2.jk<-c()

for(i in 1:length(heroin[,4])){

test.stat.jk<-c(test.stat.jk,median(heroin[-i,4]))
test.stat2.jk<-c(test.stat2.jk,mean(heroin[-i,4],trim=.25))
}

zo.hat<-qnorm(sum(test.stat<obs.stat)/1000,0,1)
a.hat<- sum((mean(test.stat.jk) - test.stat.jk)^3)/
                (6*(sum((mean(test.stat.jk)-test.stat.jk)^2)^1.5))

zo.hat2<- qnorm(sum(test.stat2< obs.stat2)/1000,0,1)
a.hat2<- sum((mean(test.stat2.jk) - test.stat2.jk)^3)/
                (6*(sum((mean(test.stat2.jk)-test.stat2.jk)^2)^1.5))

alpha1.bca<-pnorm(zo.hat + (zo.hat + qnorm(.975))/(1 - a.hat*(zo.hat + qnorm(.975))))
alpha2.bca<-pnorm(zo.hat + (zo.hat + qnorm(.025))/(1 - a.hat*(zo.hat + qnorm(.025))))


alpha1.bca2<-pnorm(zo.hat2 + (zo.hat2 + qnorm(.975))/(1 - a.hat2*(zo.hat2 + qnorm(.975))))
alpha2.bca2<-pnorm(zo.hat2 + (zo.hat2 + qnorm(.025))/(1 - a.hat2*(zo.hat2 + qnorm(.025))))


c(sort(test.stat)[ceiling(1000*alpha2.bca)],sort(test.stat)[ceiling(1000*alpha1.bca)])
c(sort(test.stat2)[ceiling(1000*alpha2.bca2)],sort(test.stat2)[ceiling(1000*alpha1.bca2)])
```

	Median			25% Trimmed Mean		
	lower	observed	upper	lower	observed	upper
Percentile	321.00	367.50	452.00	339.38	378.30	423.46
t	306.33	367.50	428.67	335.21	378.30	421.39
BS-t	294.98	367.50	418.00	334.28	378.30	418.09
BCa	317.00	367.50	444.00	338.29	378.30	422.43