Theodore Jagodits / MA 331 / HW#2

I pledge my honor that I have abided by the Stevens Honor System

Problem 1.

(i)

N = 20, P(N <= 8.25) = 0.5955987

N = 30, P(N <= 8.25) = 0.09401122

N = 50, P(N <= 8.25) = 0.0002305229

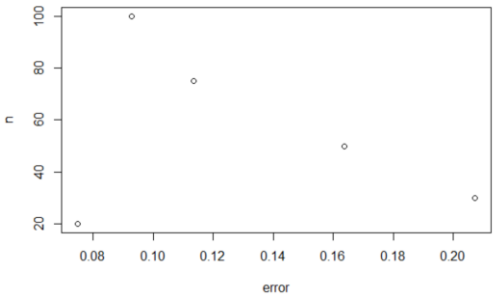
N = 75, P(N <= 8.25) = 1.826106e-08

N = 100, P(N <= 8.25) = 5.431127e-13

(ii)

n=20, P(N<=8.25)= 0.5207689
n=30, P(N<=8.25)= 0.3012414
n=50, P(N<=8.25)= 0.1637488
n=75, P(N<=8.25)= 0.1133488
n=100, P(N<=8.25)= 0.09293155

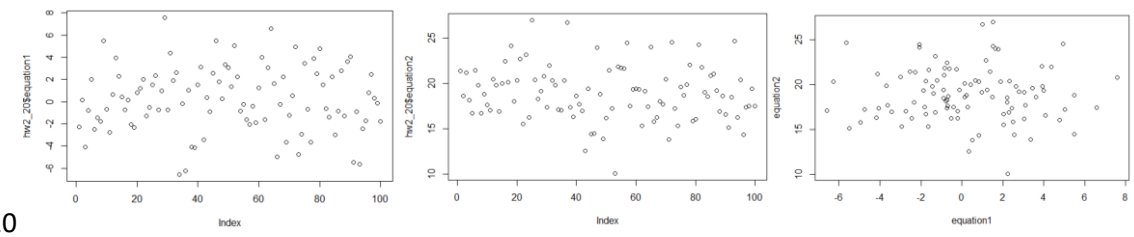
(iii)



(iv)

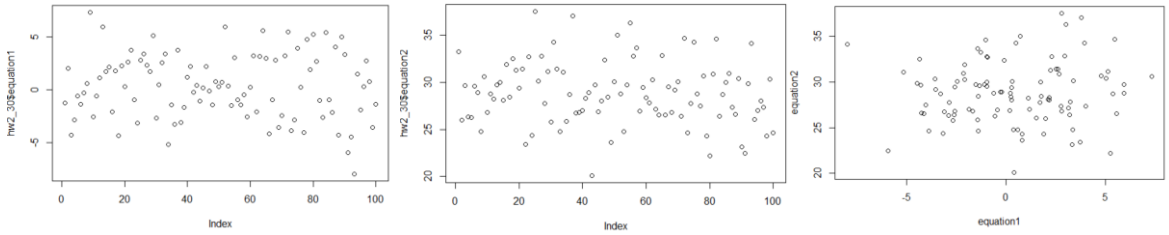
The plot follows kind of linearly after the first point n=20. But it looks like it follows some kind of equation to and the error clearly decreases as N gets larger.

Problem 2. ORDER FOR ALL PLOTS is $\frac{\bar{X}-2}{\sqrt{3^2/n}}$ **,** $\frac{(n-1)S^2}{3^2}$ **then** $\left(\frac{\bar{X}-2}{\sqrt{3^2/n}}, \frac{(n-1)S^2}{3^2}\right)$

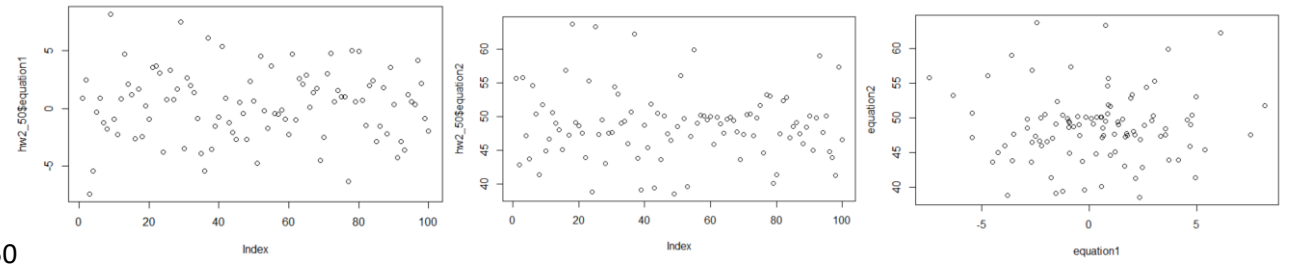


(i)N = 20

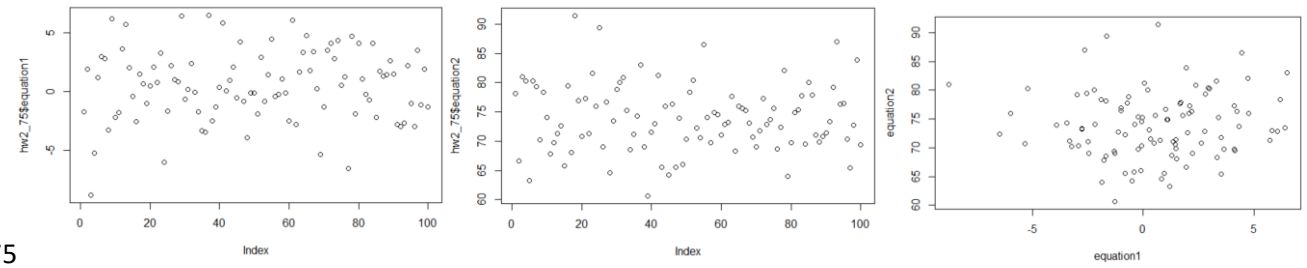
(ii)N=30



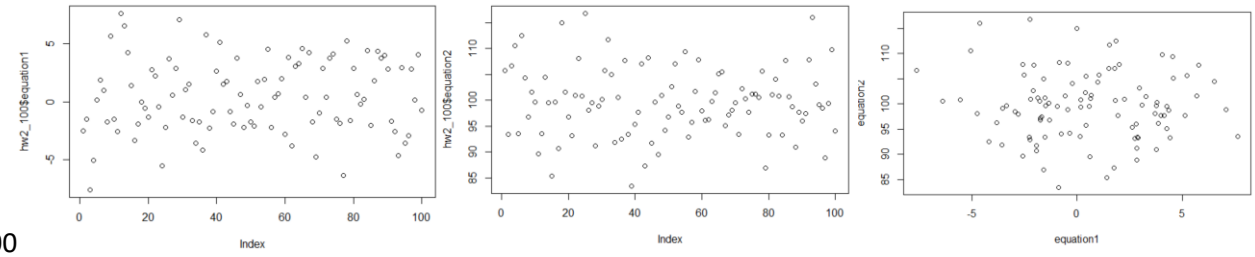
(iii)N=50



(iv)N=75



(v)N=100



(vi)

As N increases, the value of (X-2)/sqrt(3^2/n) starts approaching 0. And the value of (n-1)*S^2/3^2 starts increasing.