

TRABAJO 2

TEOREMA CENTRAL DEL LIMITE

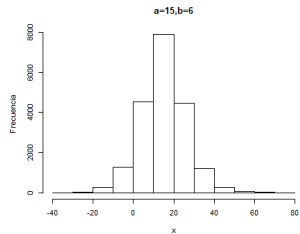
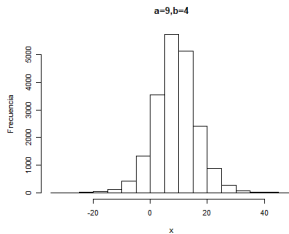
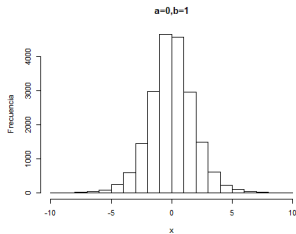
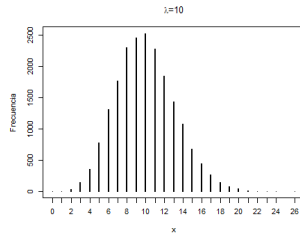
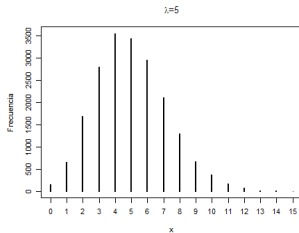
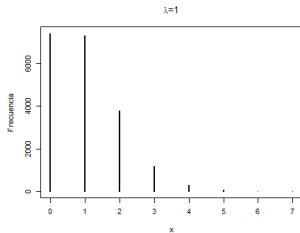
PRUEBAS DE NORMALIDAD

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Simulación Estadística

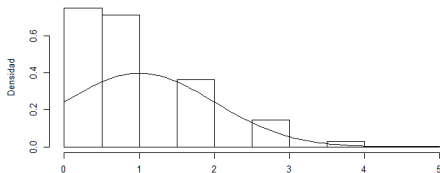
Mayo 2018

Poblaciones



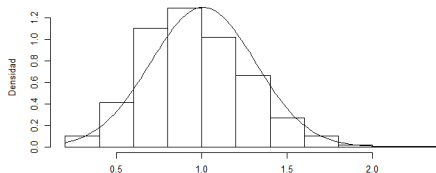
Simulación distribución Poisson($\lambda = 1$)

Media = 1.002
Varianza = 1.006



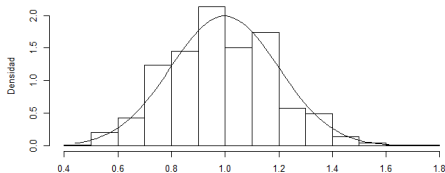
Promedios con n = 1 datos

Media = 1.0079
Varianza = 0.0938



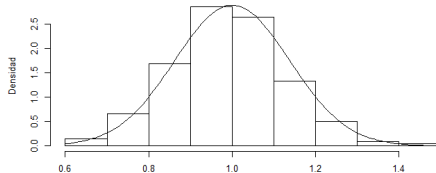
Promedios con n = 10 datos

Media = 0.998
Varianza = 0.0401



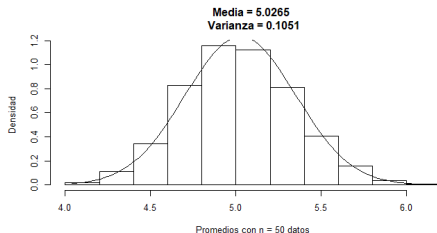
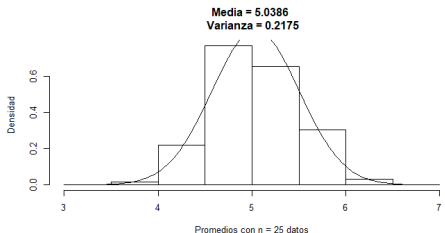
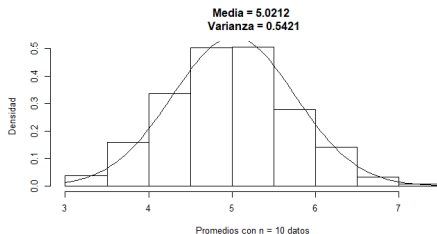
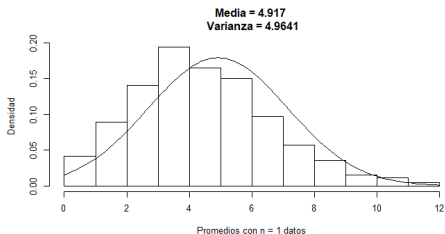
Promedios con n = 25 datos

Media = 1.0002
Varianza = 0.0189

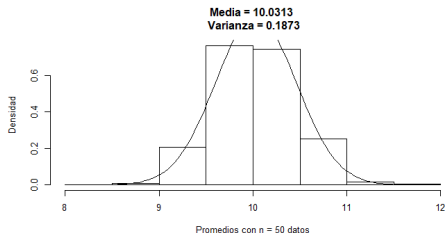
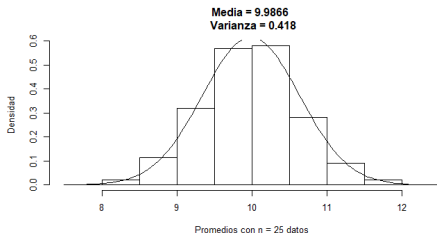
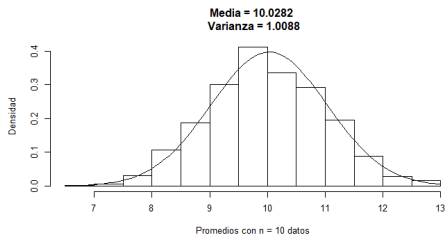
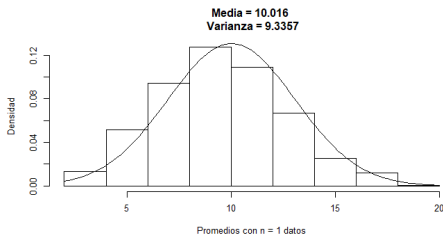


Promedios con n = 50 datos

Simulación distribución Poisson($\lambda = 5$)



Simulación distribución Poisson($\lambda = 10$)



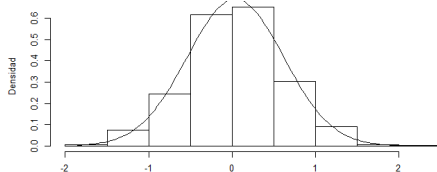
Simulación distribución Logística($\alpha = 0, \beta = 1$)

Media = -0.0244
Varianza = 3.5131



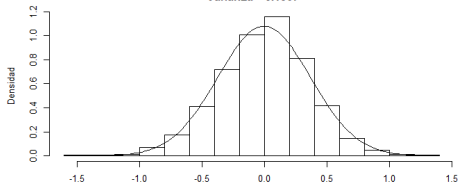
Promedios con n = 1 datos

Media = 0.0389
Varianza = 0.3335



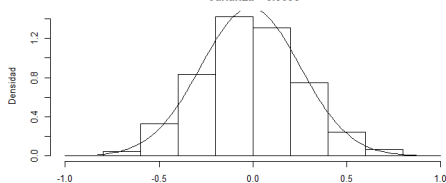
Promedios con n = 10 datos

Media = -0.0036
Varianza = 0.1367



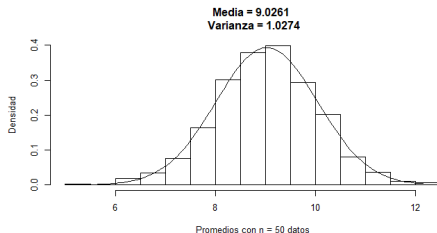
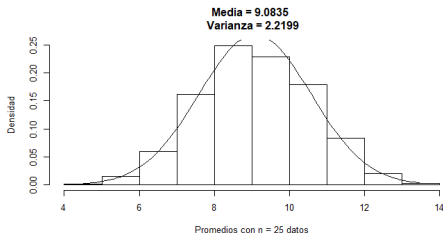
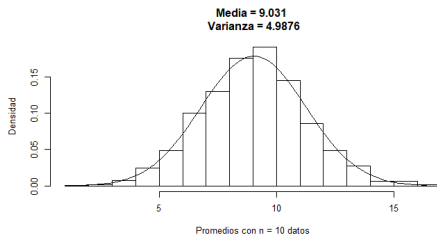
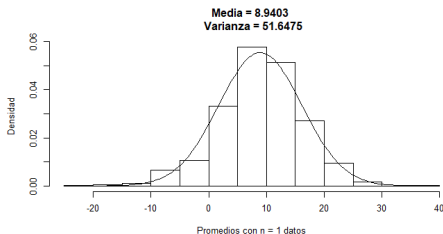
Promedios con n = 25 datos

Media = -0.0135
Varianza = 0.0695

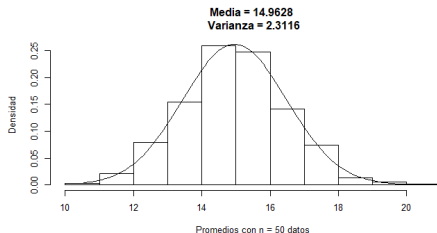
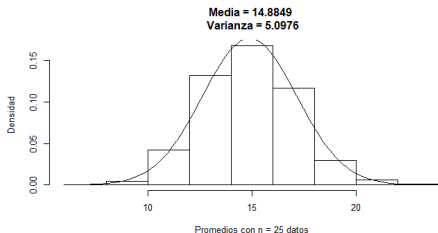
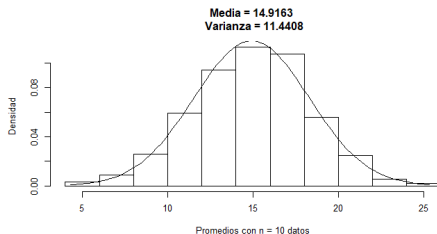
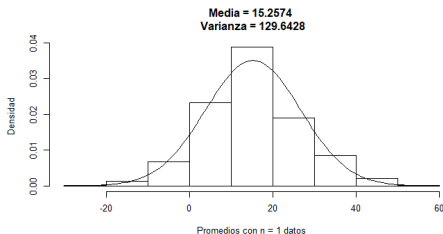


Promedios con n = 50 datos

Simulación distribución Logística($\alpha = 9, \beta = 4$)



Simulación distribución Logística($\alpha = 15, \beta = 6$)



Estadístico de prueba Cramér-Von Mises

Distribuciones para las cuales esta prueba plantea las hipótesis:

$$H_0 : f(x, \theta) = f_0(x, \theta)$$

$$H_1 : f(x, \theta) \neq f_0(x, \theta)$$

Se tiene como estadístico de prueba a:

$$W = \frac{1}{12n} + \sum_{i=1}^N \left[P_i - \frac{2i-1}{2n} \right]$$

Resultados prueba de Cramér-Von Mises para la distribución Poisson

	n=1		n=5		n=10		n=30	
Parámetro	W	P-Valor	W	P-Valor	W	P-Valor	W	P-valor
$\lambda=1$	413.11	0.09893	684.06	0.1594	773.64	0.1755	867.2	0.1907
$\lambda=5$	1574.2	0.2727	1665.3	0.2805	1666.5	0.2806	1666.6	0.2806
$\lambda=10$	1665.5	0.2805	1666.7	0.2806	1666.7	0.2806	1666.7	0.2806

Figura: Comparación resultados prueba de Cramér-Von Mises

Resultados prueba de Cramér-Von Mises para la distribución Logística

	n=1		n=10		n=25		n=50	
Parámetro	W	P-Valor	W	P-Valor	W	P-Valor	W	P-valor
$\alpha=0, \beta=1$	34.305	0.00003161	44.849	0.0002001	123.58	0.01235	186.76	0.03106
$\alpha=9, \beta=4$	1119.3	0.2254	1664.4	0.2805	1666.7	0.2806	1666.7	0.2806
$\alpha=15, \beta=6$	1254.3	0.2411	1666.6	0.2806	1666.7	0.2806	1666.7	0.2806

Figura: Comparación resultados prueba de Cramér-Von Mises