

Pruebas Estadísticas

Tarea III

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Curso: Simulación
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Introducción

Las pruebas estadísticas que se usaron fueron las mismas vistas en clase:

- Promedio
- Varianza
- Corridas por incrementos (continuos) y arriba/abajo (discretos)
- Dígitos
- Números
- Poker
- Series

	C	Python	Erlang	Racket	Java	C++
Continuos	[1,4] y [1,8]	[1,6]	NA	[1,20]	NA	[1,10]
Discretos	NA	[0,1[[0,1[NA	[0,1[NA

Fórmulas

Prueba de Promedio y Varianza

Discretos:

$$\sigma^2 = \frac{(r-l+1)^2 - 1}{12}$$

$$\mu = \frac{\sum_{i=l}^r i}{r-l+1}$$

Prueba de Corrida Arriba/Abajo

Discretos:

$$E(h) = \frac{2 \times m \times n}{n+m+1}$$

$$\sigma^2 = \frac{2 \times m \times n \times (2 \times m \times n - (m+n))}{(m+n)^2 \times (m+n-1)}$$

Prueba de Dígitos

Discretos:

tamano del hueco = base - 1

Prueba de Números

Discretos:

$$[3, \min(\text{base}, 3 + \lfloor \frac{\text{base}}{3} \rfloor)]$$

Prueba de Poker

$$P(\text{diferentes}) = \frac{\prod_{i=0}^4 \text{base}-i}{\text{base}^5}$$

$$P(1 \text{ pareja}) = \frac{\prod_{i=0}^3 \text{base}-i}{\text{base}^5} \times \binom{5}{2}$$

$$P(2 \text{ parejas}) = \frac{\prod_{i=0}^2 \text{base}-i}{2 \times \text{base}^5} \times \binom{5}{2} \times \binom{3}{2}$$

$$P(\text{trio}) = \frac{\prod_{i=0}^2 \text{base}-i}{\text{base}^5} \times \binom{5}{3}$$

$$P(\text{full house}) = \frac{\prod_{i=0}^1 \text{base}-i}{\text{base}^5} \times \binom{5}{3}$$

$$P(\text{poker}) = \frac{\prod_{i=0}^1 \text{base}-i}{\text{base}^5} \times \binom{5}{4}$$

$$P(\text{quitilla}) = \frac{\text{base}}{\text{base}^5}$$

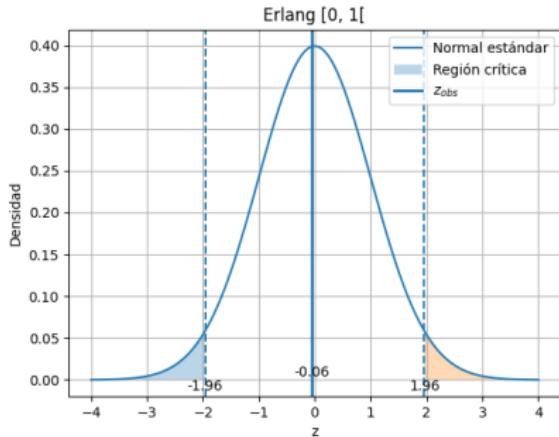
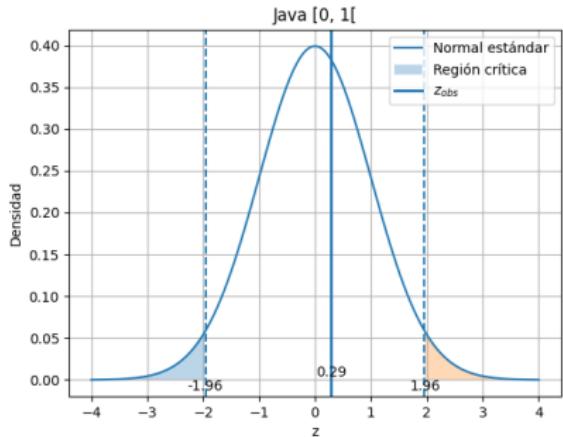
Prueba de Series

Discretos:

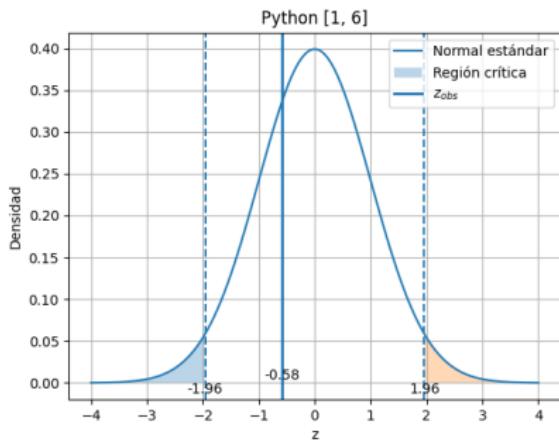
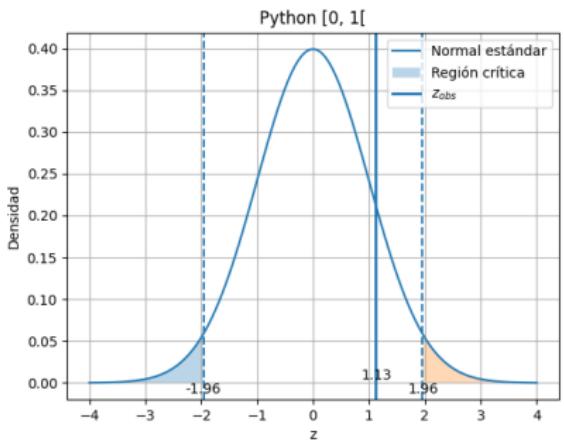
$$\text{cantidad de intervalos} = \frac{\text{base}}{2}$$

$$\text{intervalos} = [0, 2, 4, \dots, 2 * i, \dots, 2 * \text{cantidad}]$$

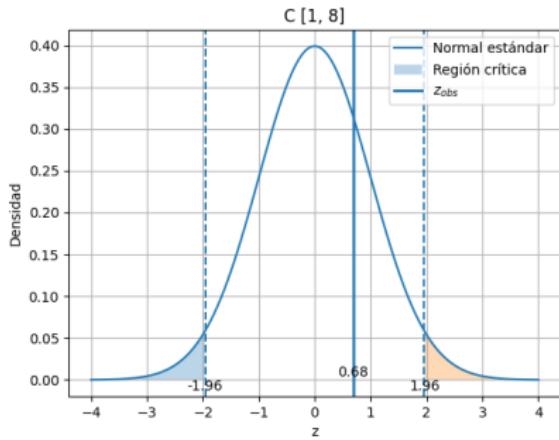
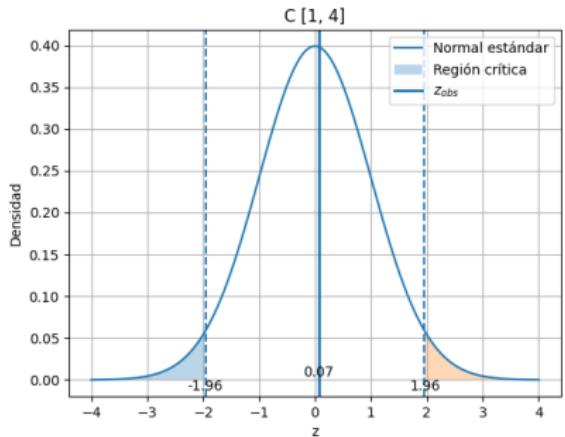
Pruebas de Promedio



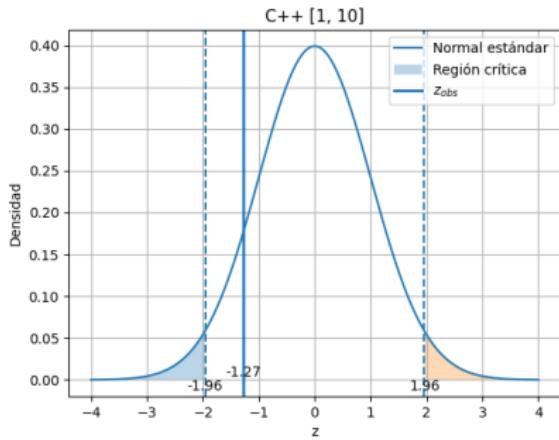
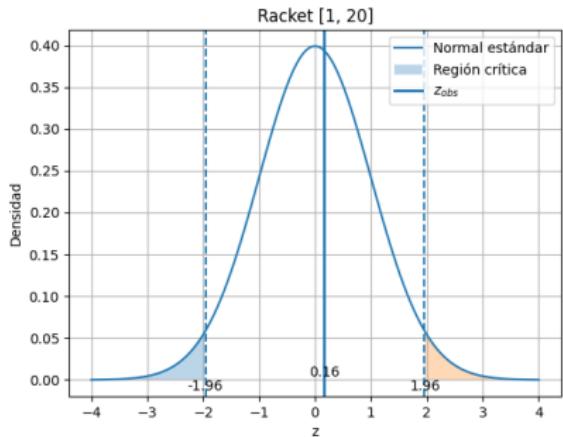
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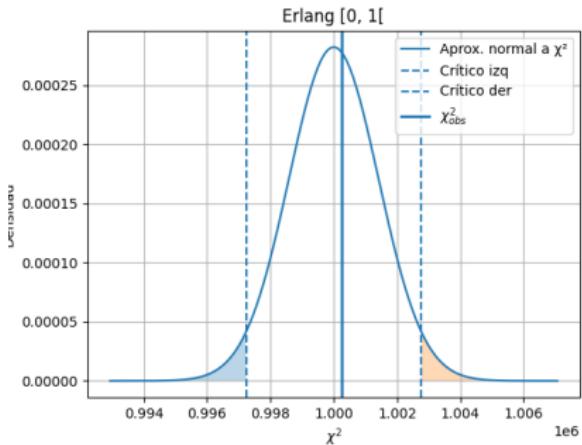
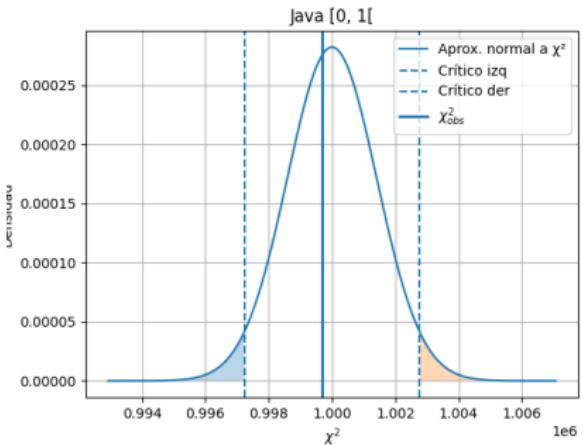
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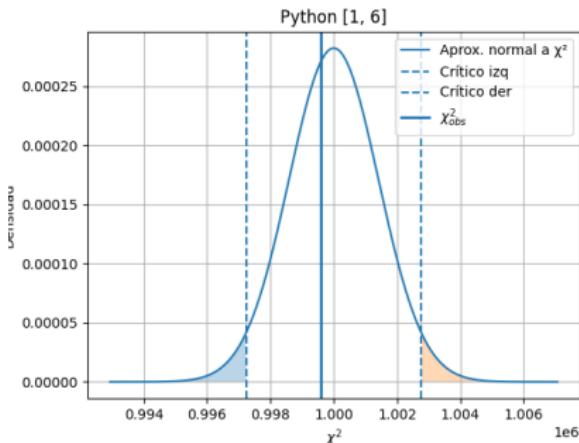
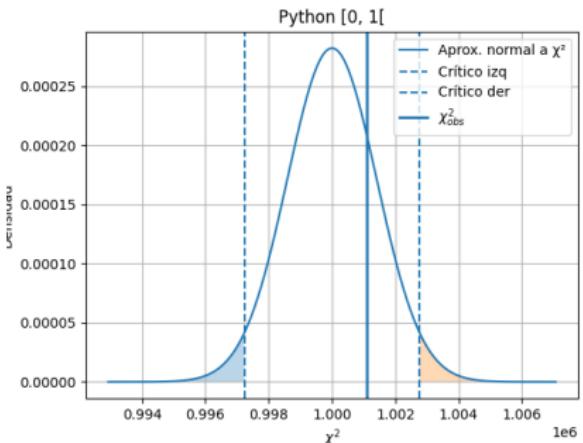
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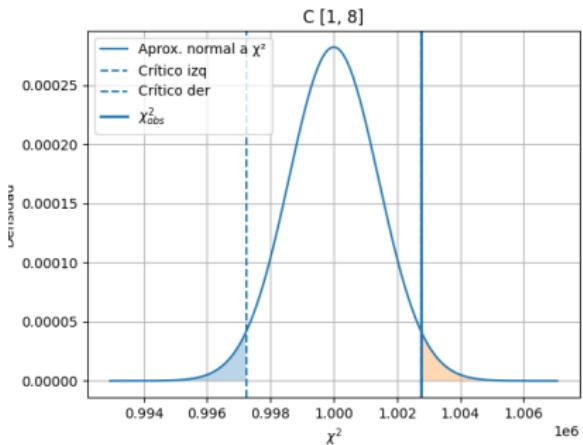
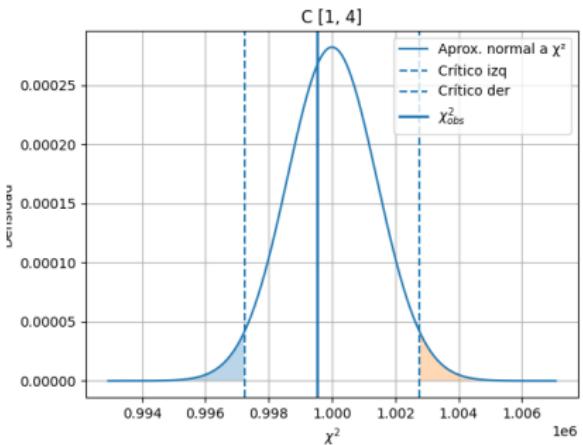
Pruebas de Varianza



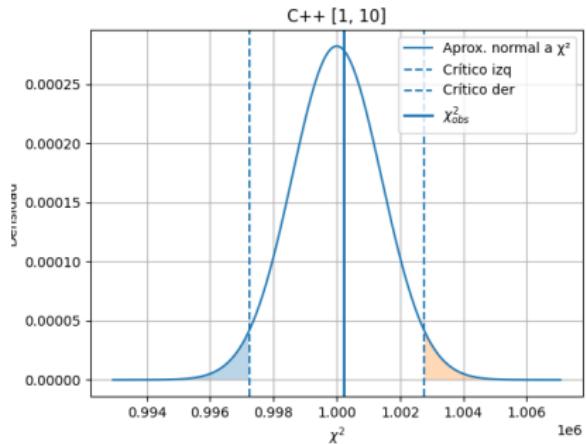
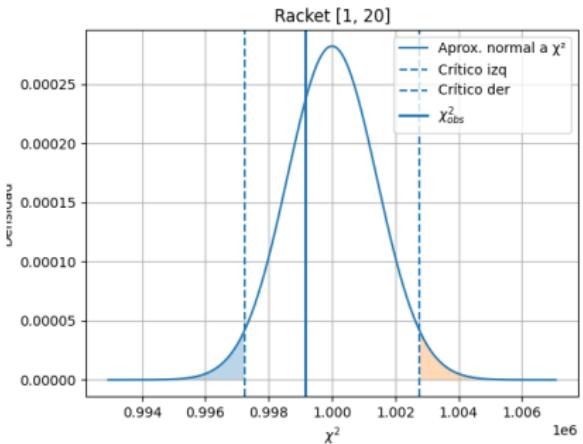
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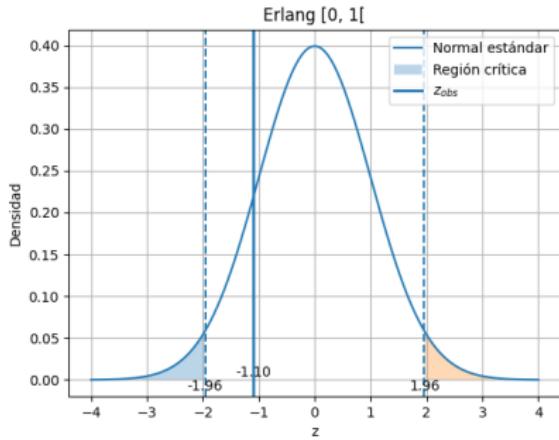
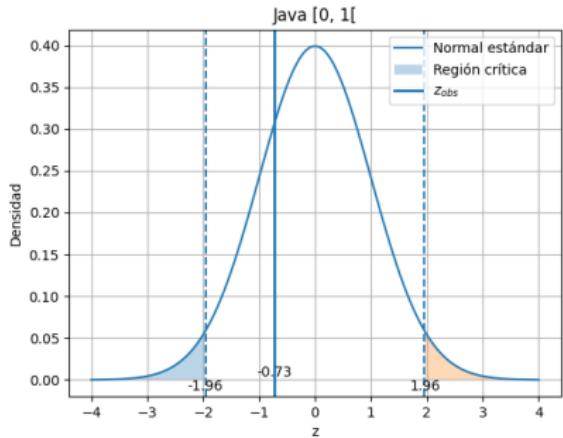
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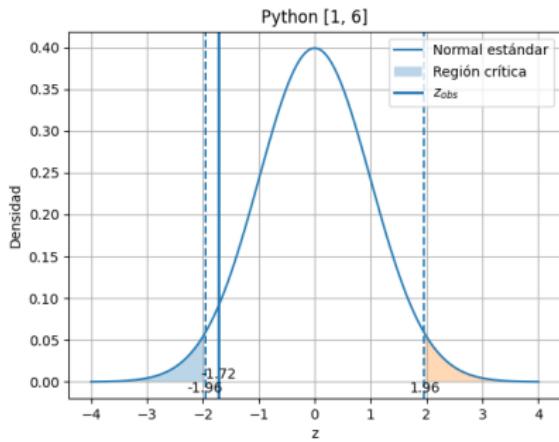
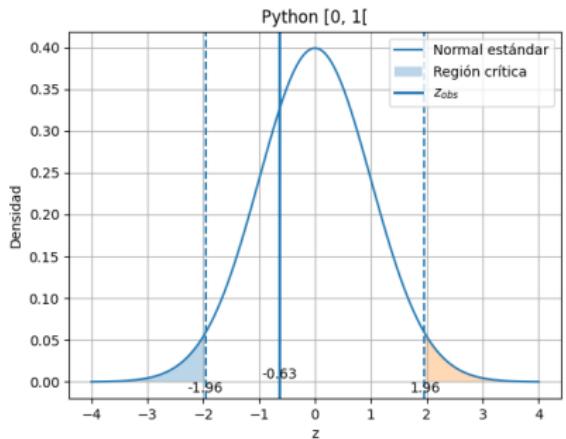
Pruebas de Varianza



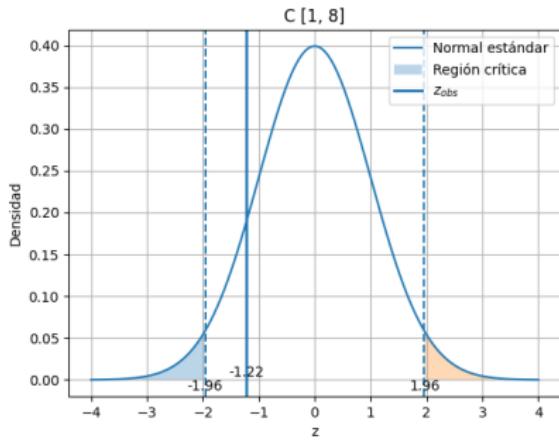
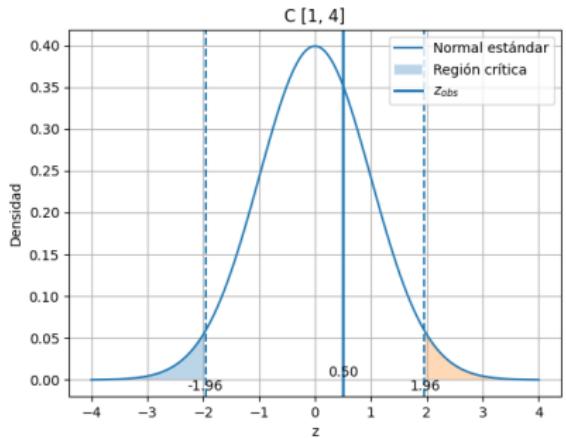
Pruebas de Corridas



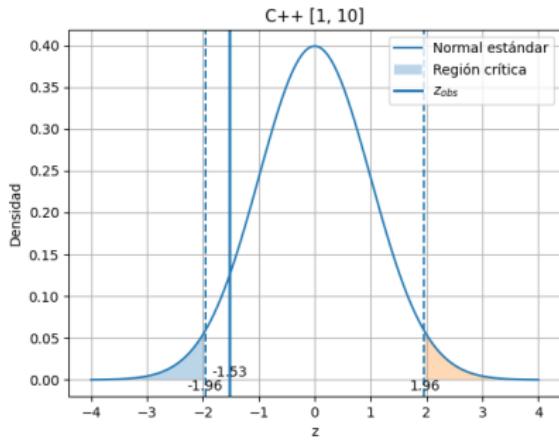
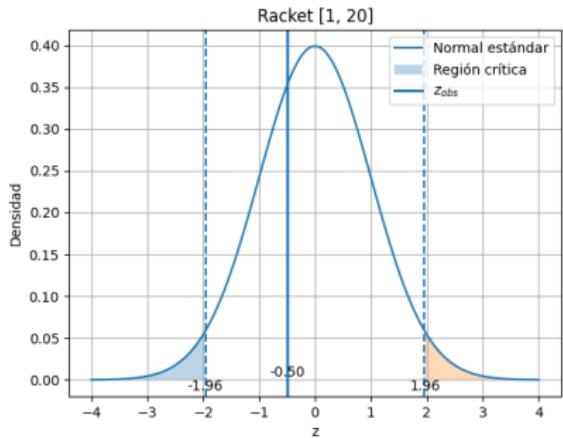
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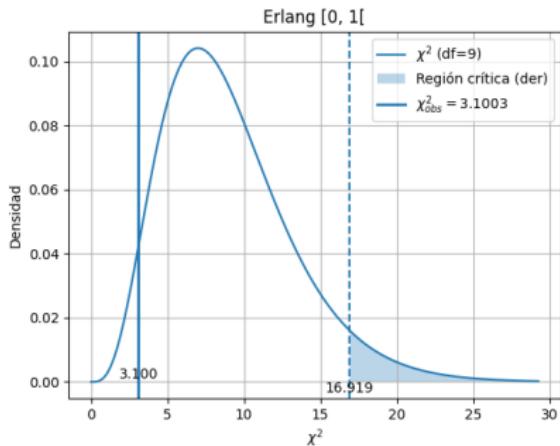
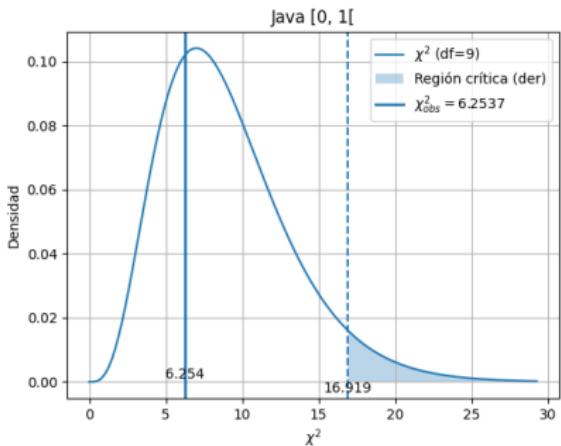
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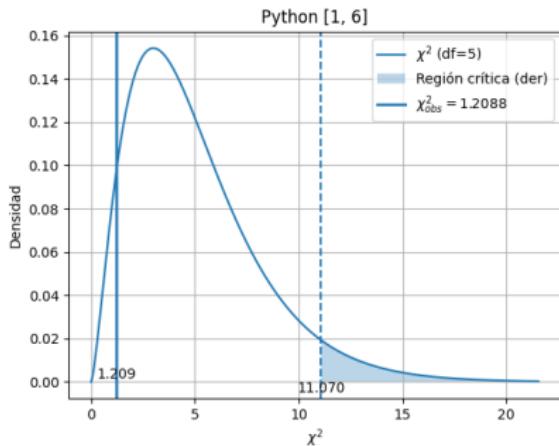
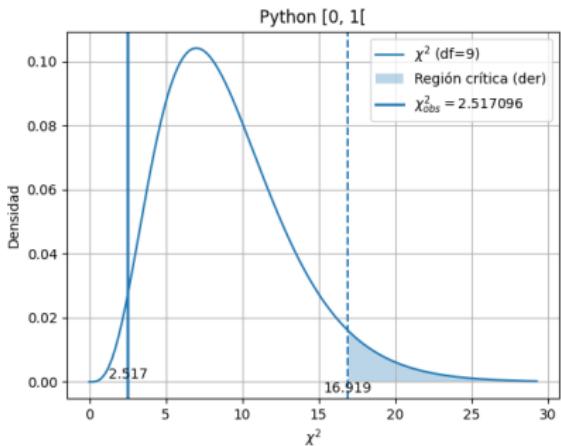
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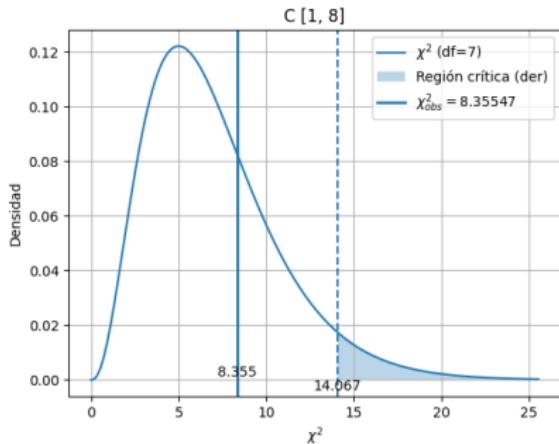
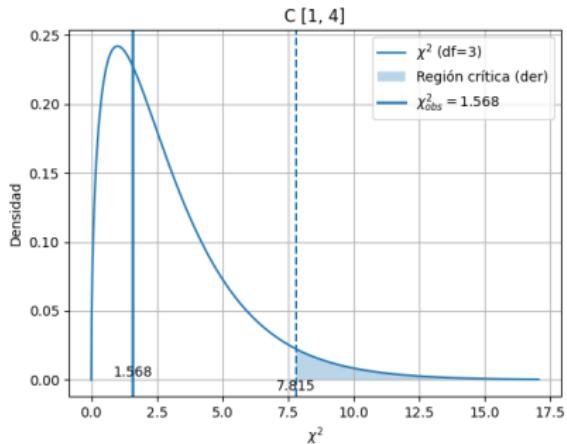
Pruebas de Huecos con Dígitos



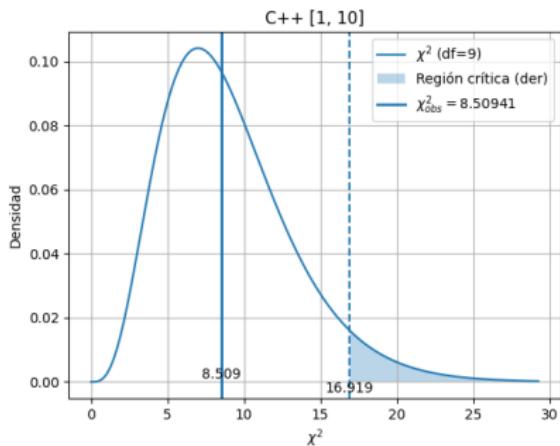
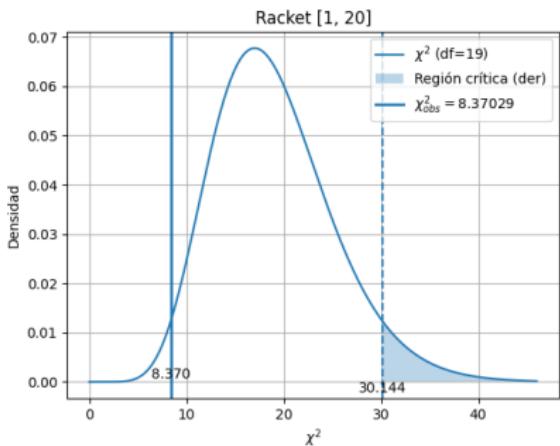
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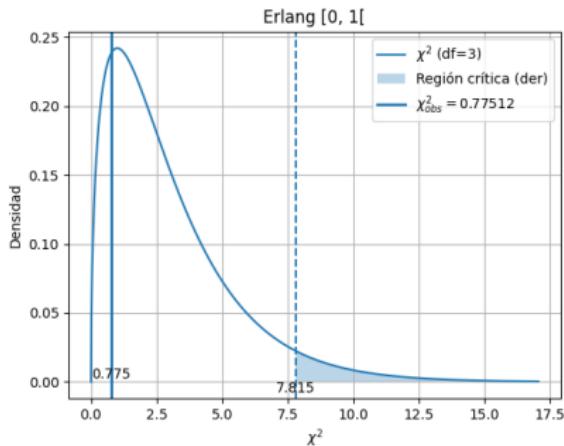
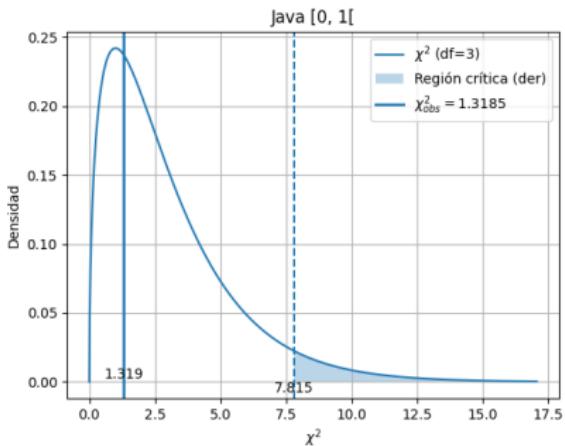
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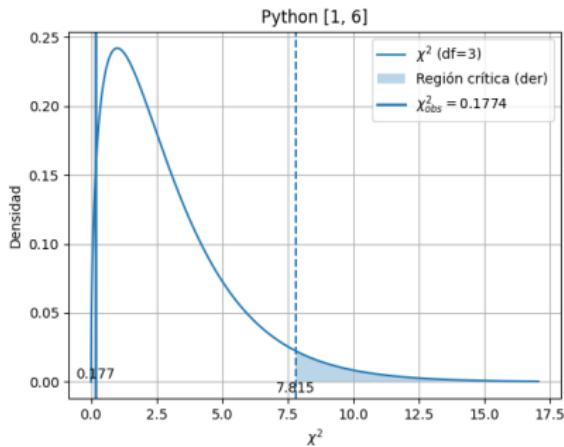
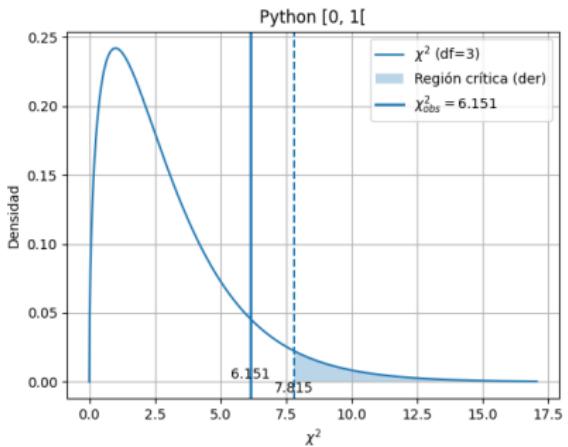
Pruebas de Huecos con Dígitos



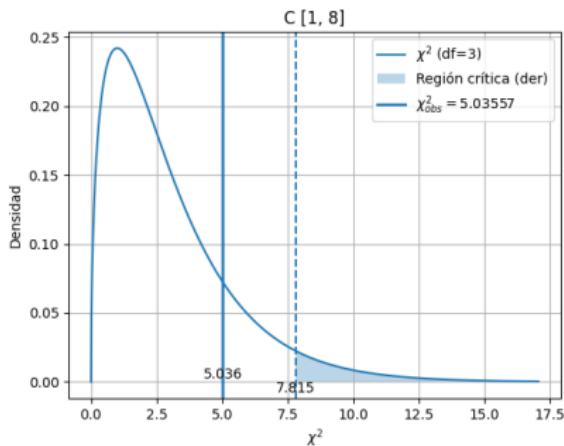
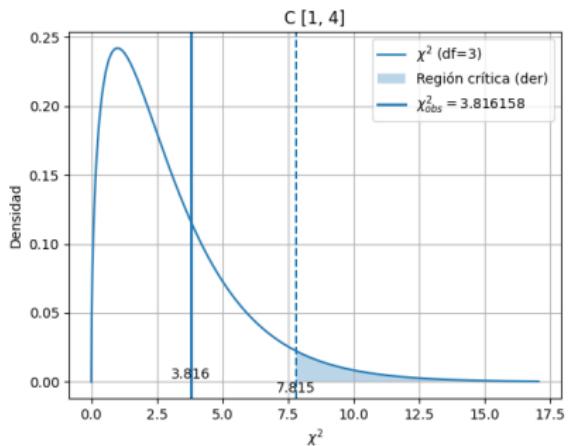
Pruebas de Huecos con Números



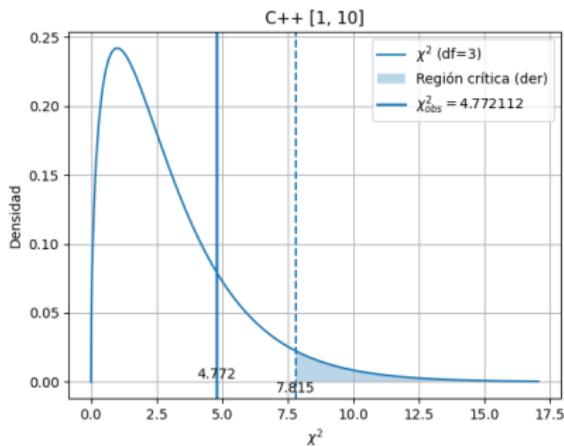
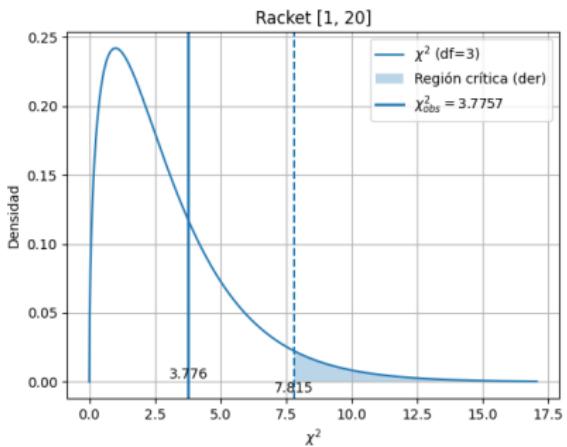
Pruebas de Huecos con Números



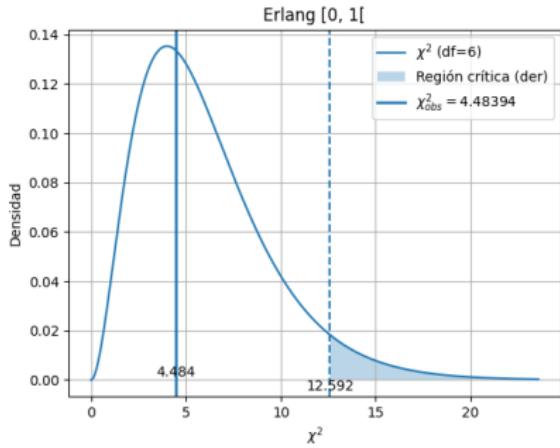
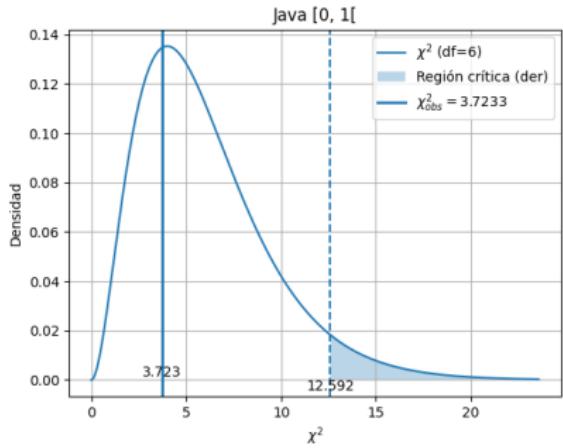
Pruebas de Huecos con Números



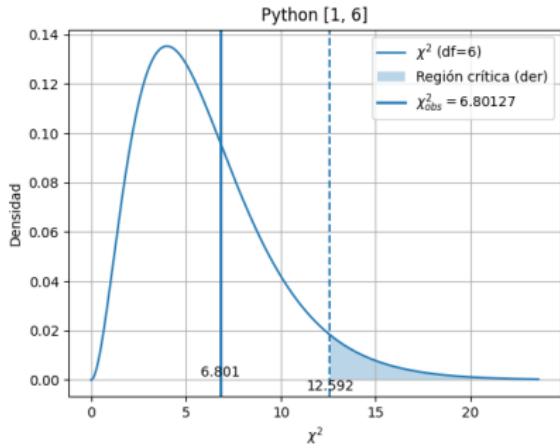
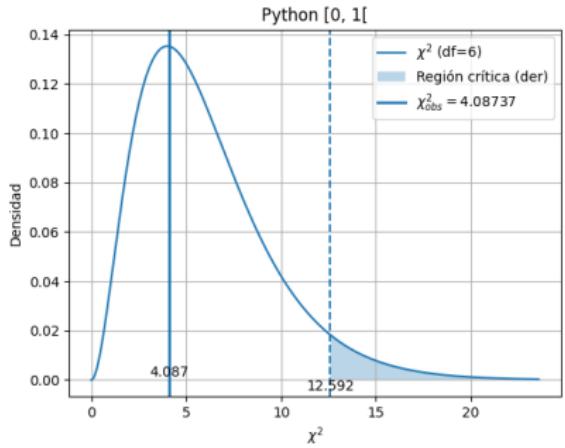
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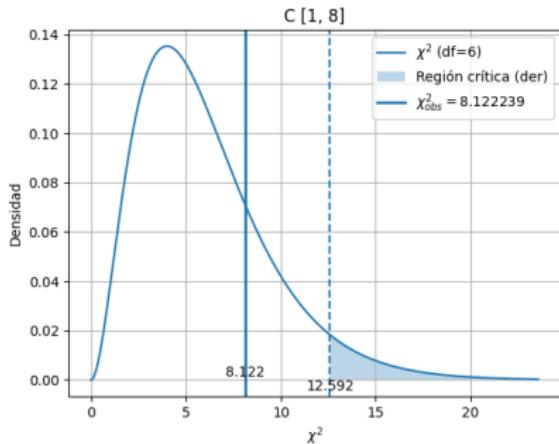
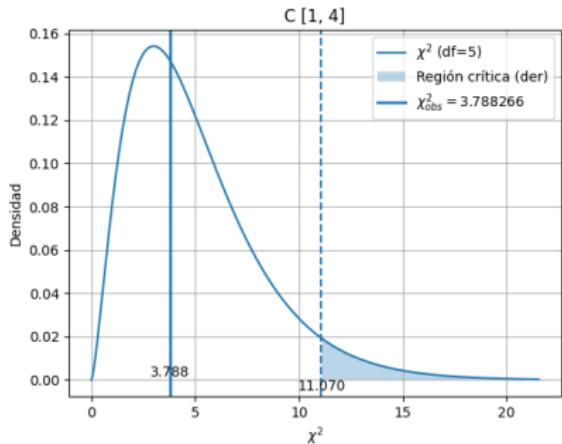
Pruebas de Poker



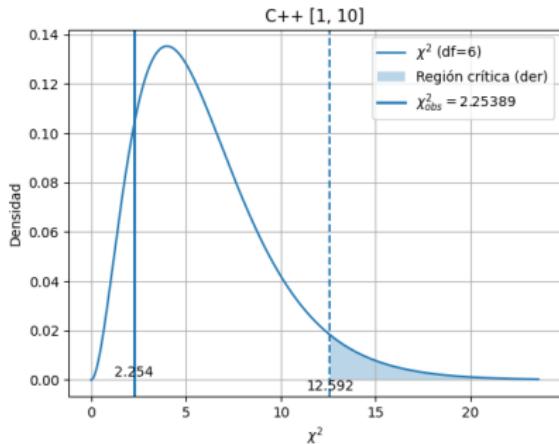
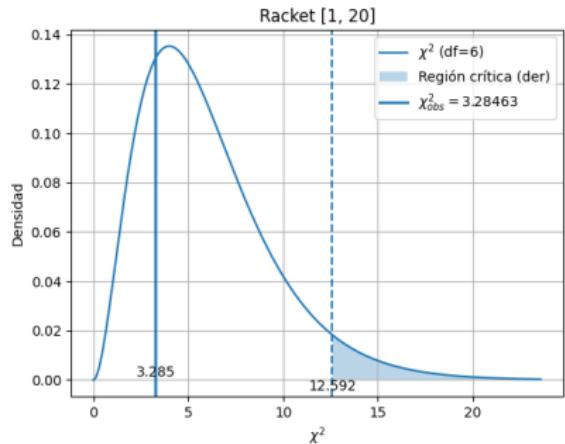
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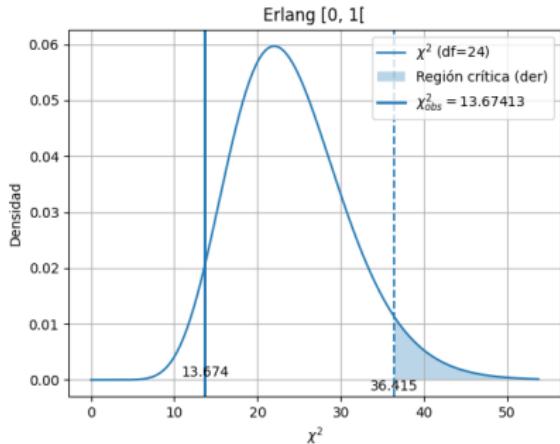
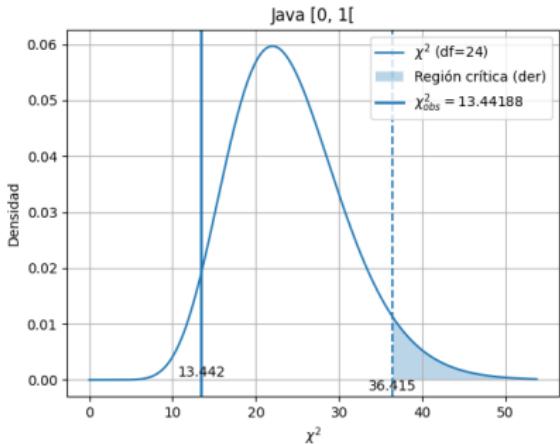
Pruebas de Poker



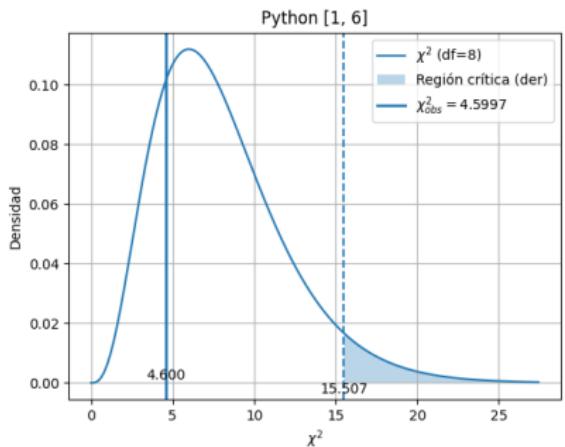
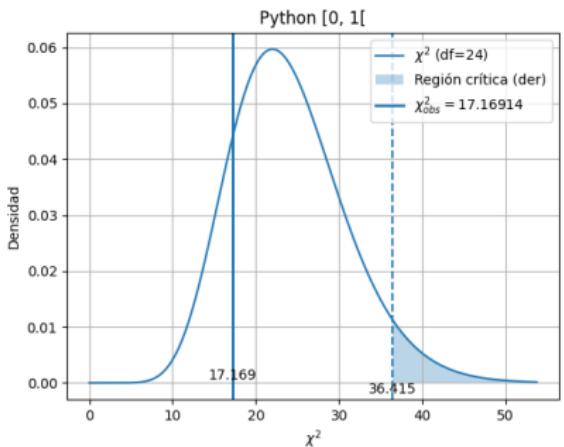
Pruebas de Poker



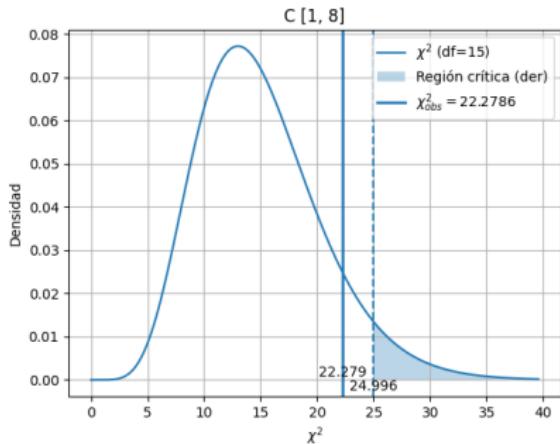
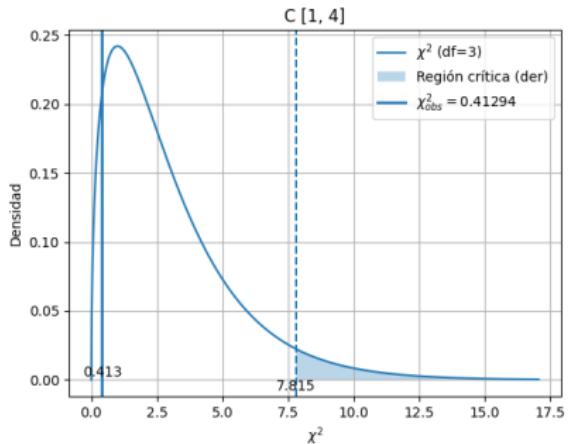
Pruebas de Series



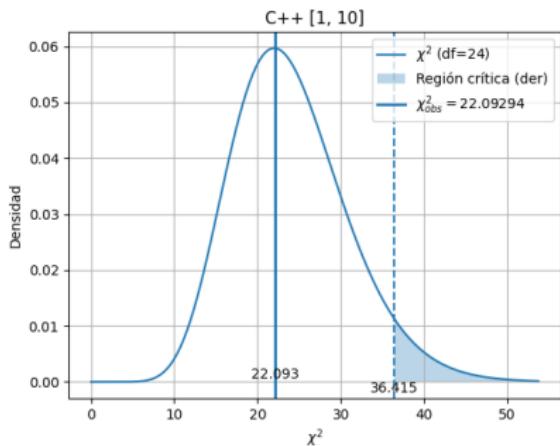
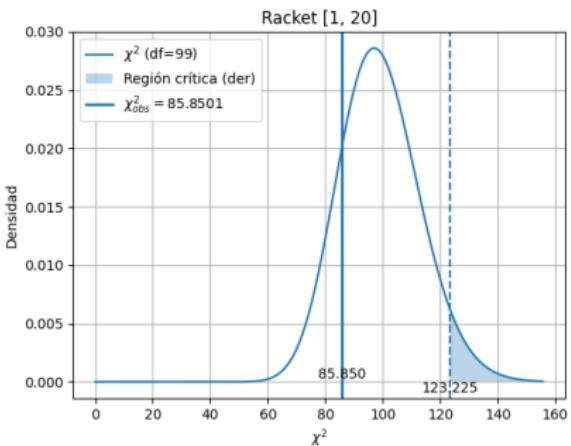
Pruebas de Series



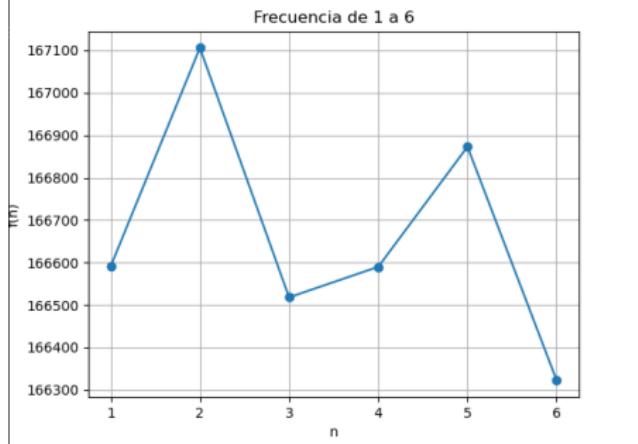
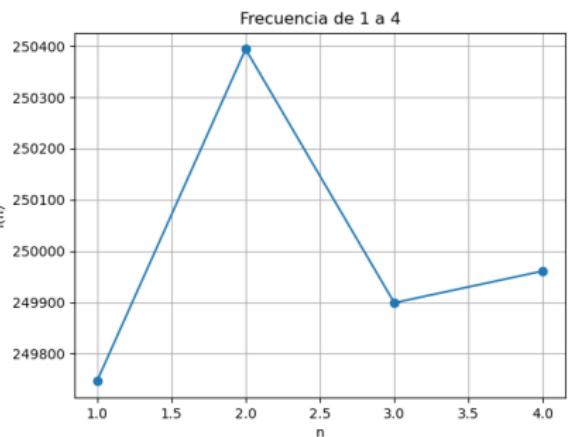
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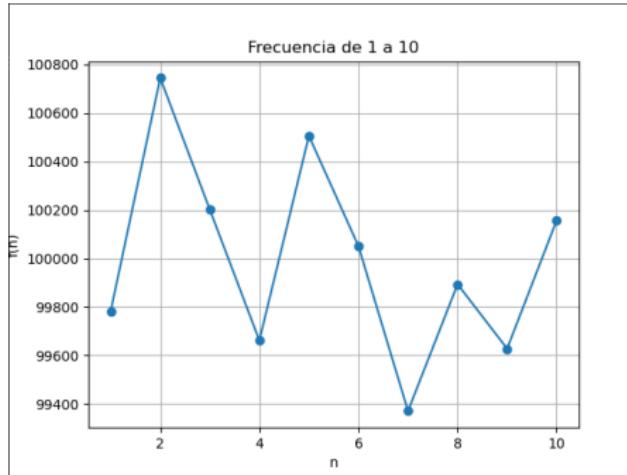
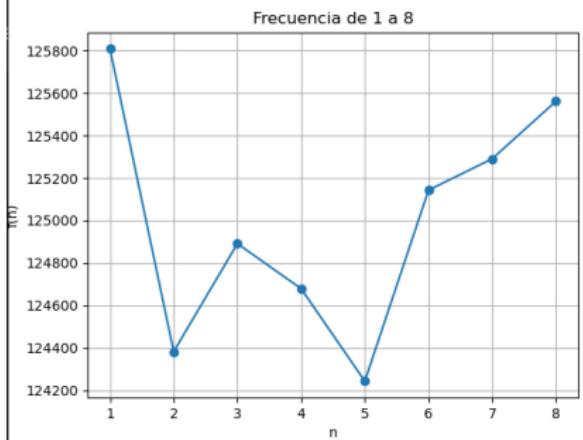
Pruebas de Series



Muestras Discretas

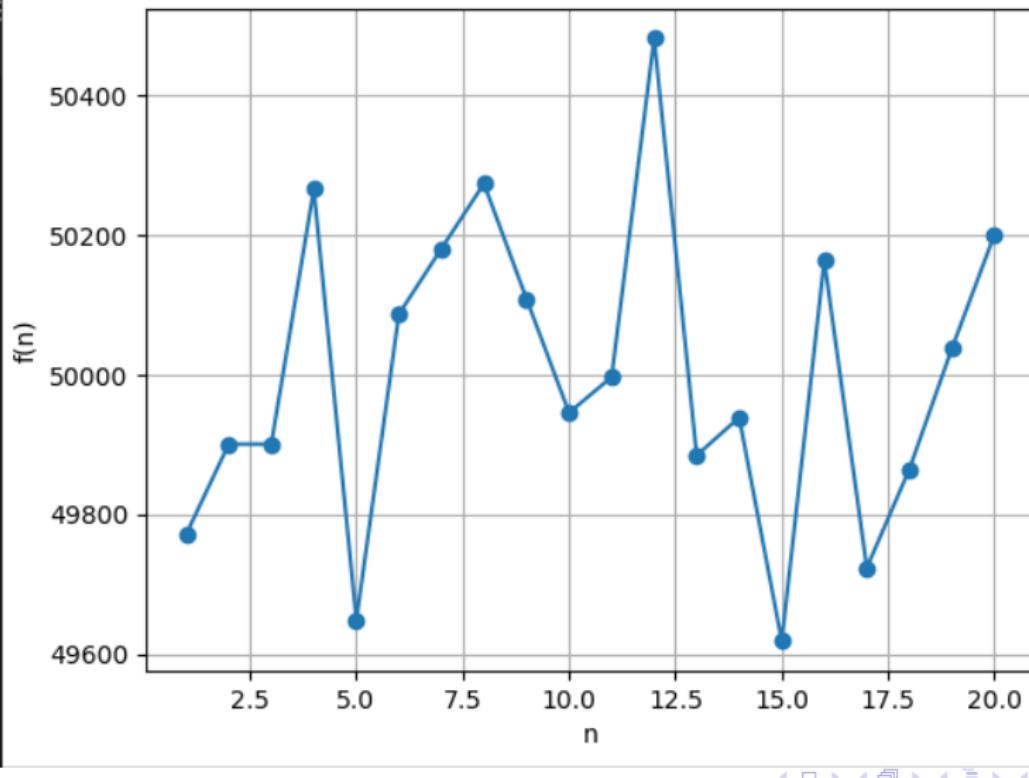


Muestras Discretas



Muestras Discretas

Frecuencia de 1 a 20



Conclusiones

Durante la fase de ejecución de los tests sobre los programas de prueba, una muestra de Python (de 1 a 6) fue rechazada en la prueba de dígitos, y una muestra en C (de 1 a 4) fue rechazada en la prueba de Póker.

	Continous	Discretos
Promedio	Erlang: 1.635×10^{-5}	C-4: 7.49×10^{-5}
Varianza	Java: 9.99×10^5	Racket: 9.99×10^5
Corridas	Python: 0.63	Racket: 0.49
Dígitos	Python: 14.40	Racket: 21.77
Números	Erlang: 7.039	Python: 7.63
Poker	Java: 8.86	C++ : 10.33
Series	Java: 22.97	Racket: 37.37