Proyecto 2, Modelos de Gestión Financiera

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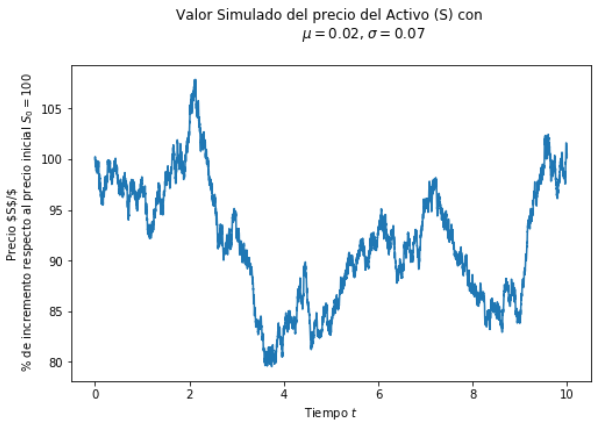
Punto 1

In [2]:
```
from simulador_S import grafico_valor_activo

import numpy as np
import matplotlib.pyplot as plt
import time
%matplotlib inline
```

Función para simulación

In [11]:
```
grafico_valor_activo(S0 = 100, mu = 0.02, sig = 0.07, dt = 0.001, Dt = 1, N = 10, graficar = True, pts = 0, txtad = "")
```



Out[11]:
```
(array([0.000e+00, 1.000e-03, 2.000e-03, ..., 9.998e+00, 9.999e+00,
        1.000e+01]),
 array([100.        , 100.24523978, 100.21872879, ..., 100.16475906,
        100.11972553, 100.46219539]))
```

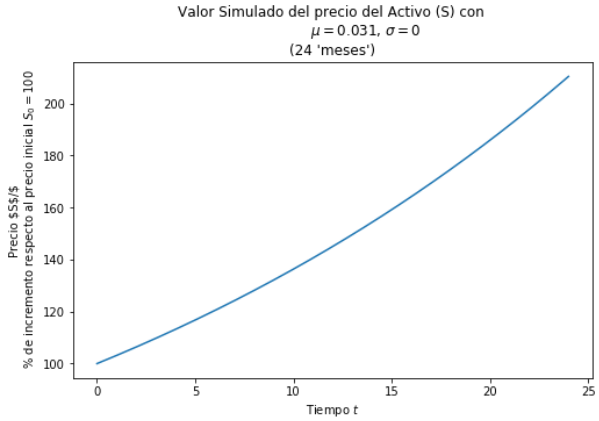
In [2]:
```
def est_precis(ddt, mmu = 0.9, Ene = 48):
    start = time.time()
    ts, Ss = grafico_valor_activo(S0 = 1, mu = mmu, sig = 0, dt = ddt, Dt = 3, N = Ene, graficar = False)
    t = ts[-1]
    exCalc = Ss[-1]
    exReal = np.exp(mmu*t)
    error = np.abs(exCalc/exReal - 1)
    print("Para dt =", ddt, ", e**(", mmu, t, ") calculado:\t", exCalc)
    print("Para dt =", ddt, ", e**(", mmu, t, ") real:\t", exReal)
    print("Asi que, para dt =", ddt, " hubo un error de:", error*100, "%")
    print("Tiempo: ", time.time() - start, "\n")
est_precis(ddt = 0.0001)
est_precis(ddt = 0.0005)
est_precis(ddt = 0.001)
est_precis(ddt = 0.01)
```

```
Para dt = 0.0001 , e**( 0.9 144.0 ) calculado:   1.9143978647135023e+56
Para dt = 0.0001 , e**( 0.9 144.0 ) real:        1.9255945791484567e+56
Asi que, para dt = 0.0001  hubo un error de: 0.5814679037944637 %
Tiempo:  10.732323408126831

Para dt = 0.0005 , e**( 0.9 144.0 ) calculado:   1.8702713688723112e+56
Para dt = 0.0005 , e**( 0.9 144.0 ) real:        1.9255945791484567e+56
Asi que, para dt = 0.0005  hubo un error de: 2.8730455971999413 %
Tiempo:  2.2553927898406982

Para dt = 0.001 , e**( 0.9 144.0 ) calculado:    1.816569369920516e+56
Para dt = 0.001 , e**( 0.9 144.0 ) real:         1.9255945791484567e+56
Asi que, para dt = 0.001  hubo un error de: 5.661898429115553 %
Tiempo:  1.14546537399292

Para dt = 0.01 , e**( 0.9 144.0 ) calculado:     1.0784345960075816e+56
Para dt = 0.01 , e**( 0.9 144.0 ) real:  1.9255945791484567e+56
Asi que, para dt = 0.01  hubo un error de: 43.99472206218555 %
Tiempo:  0.10913729667663574
```

$\mu = 0.031$

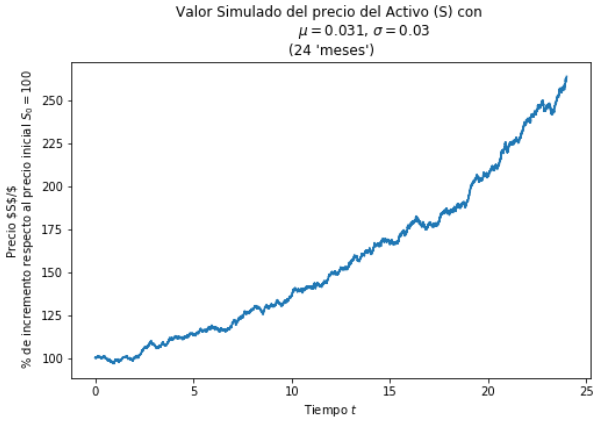
$\sigma = 0$

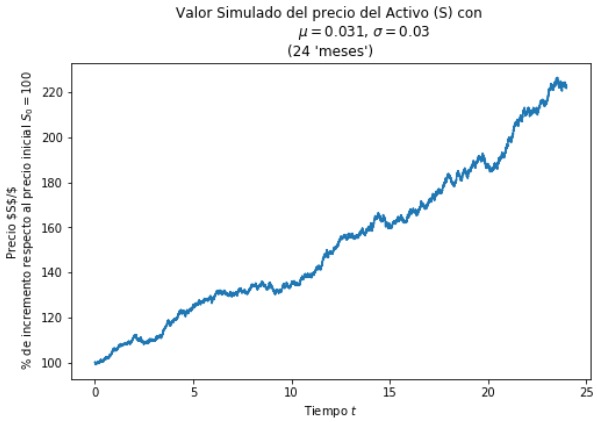
In [3]:
```
# Mes
_= grafico_valor_activo(mu = 0.031, sig = 0, Dt = 1, N = 24, txtad = "(24 'meses')")
_= grafico_valor_activo(mu = 0.031, sig = 0, Dt = 1, N = 24*3, txtad = "(72 'meses')")
```

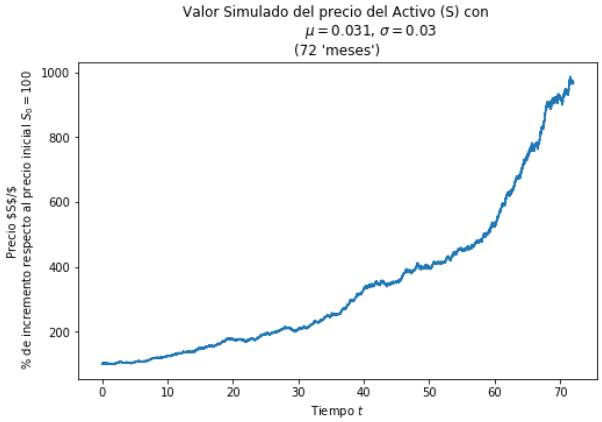


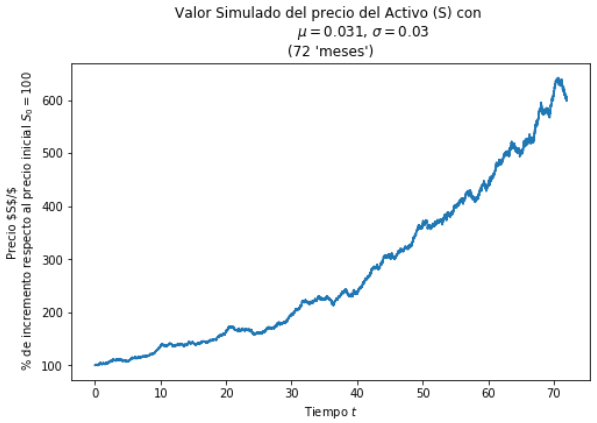
$\sigma = 0.03$

In [4]:
```
# Mes
_= grafico_valor_activo(mu = 0.031, sig = 0.03, Dt = 1, N = 24, txtad = "(24 'meses')")
_= grafico_valor_activo(mu = 0.031, sig = 0.03, Dt = 1, N = 24, txtad = "(24 'meses')")
_= grafico_valor_activo(mu = 0.031, sig = 0.03, Dt = 1, N = 24*3, txtad = "(72 'meses')")
_= grafico_valor_activo(mu = 0.031, sig = 0.03, Dt = 1, N = 24*3, txtad = "(72 'meses')")
```



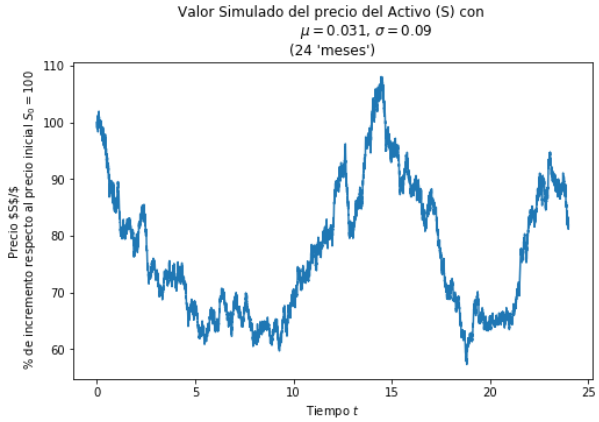


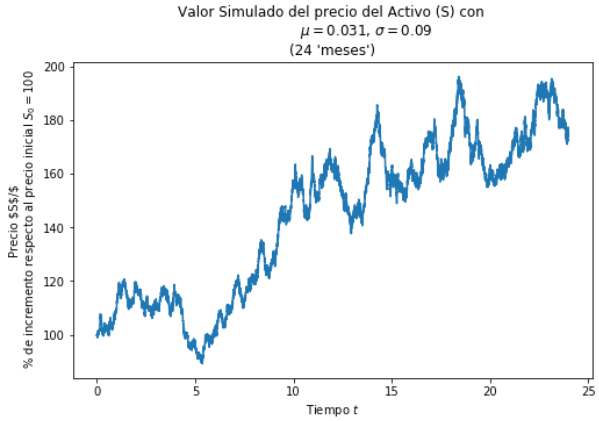




$\sigma = 0.09$

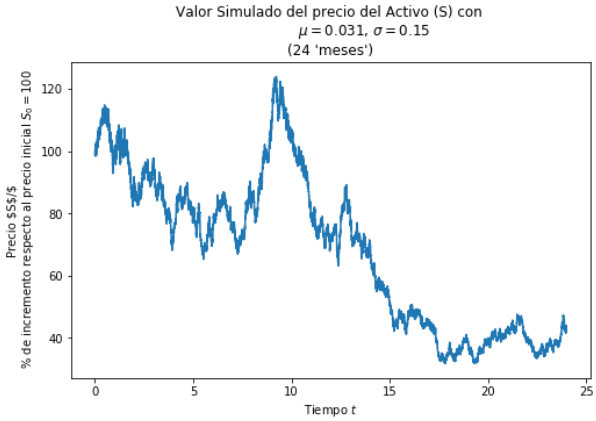
In [5]:
```
# Mes
_= grafico_valor_activo(mu = 0.031, sig = 0.09, Dt = 1, N = 24, txtad = "(24 'meses')")
_= grafico_valor_activo(mu = 0.031, sig = 0.09, Dt = 1, N = 24, txtad = "(24 'meses')")
_= grafico_valor_activo(mu = 0.031, sig = 0.09, Dt = 1, N = 24*3, txtad = "(72 'meses')")
_= grafico_valor_activo(mu = 0.031, sig = 0.09, Dt = 1, N = 24*3, txtad = "(72 'meses')")
```

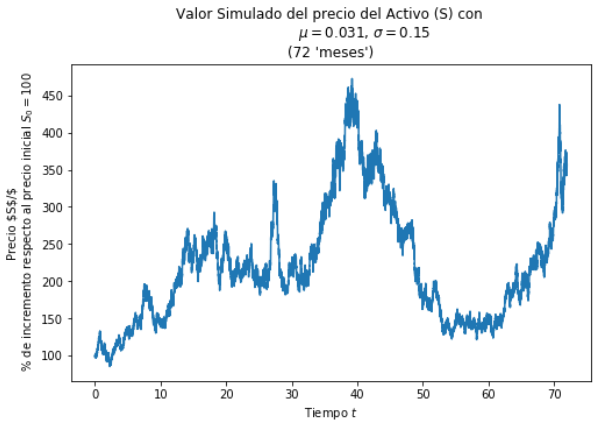


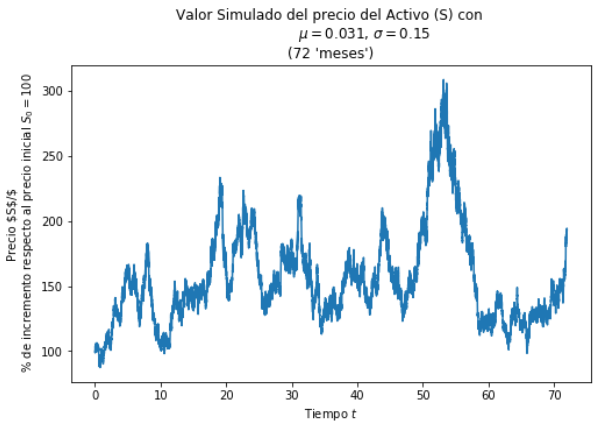


$\sigma = 0.15$

In [6]:
```
# Mes
_= grafico_valor_activo(mu = 0.031, sig = 0.15, Dt = 1, N = 24, txtad = "(24 'meses')")
_= grafico_valor_activo(mu = 0.031, sig = 0.15, Dt = 1, N = 24, txtad = "(24 'meses')")
_= grafico_valor_activo(mu = 0.031, sig = 0.15, Dt = 1, N = 24*3, txtad = "(72 'meses')")
_= grafico_valor_activo(mu = 0.031, sig = 0.15, Dt = 1, N = 24*3, txtad = "(72 'meses')")
```

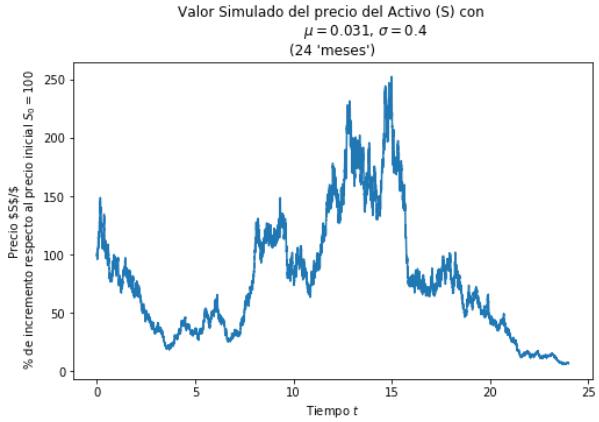


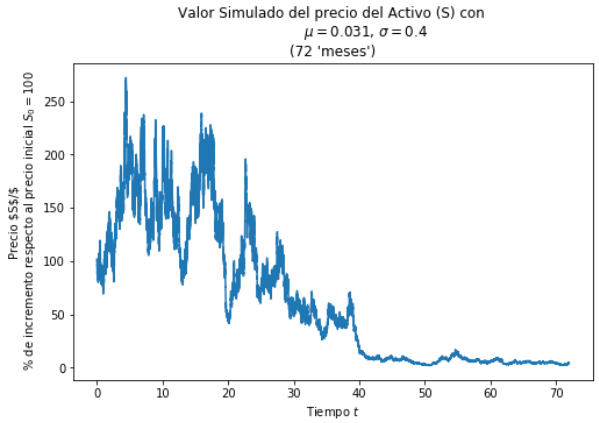




$\sigma = 0.4$

In [7]:
```
# Mes
_= grafico_valor_activo(mu = 0.031, sig = 0.4, Dt = 1, N = 24, txtad = "(24 'meses')")
_= grafico_valor_activo(mu = 0.031, sig = 0.4, Dt = 1, N = 24, txtad = "(24 'meses')")
_= grafico_valor_activo(mu = 0.031, sig = 0.4, Dt = 1, N = 24*3, txtad = "(72 'meses')")
_= grafico_valor_activo(mu = 0.031, sig = 0.4, Dt = 1, N = 24*3, txtad = "(72 'meses')")
```





$\sigma = 1$

In [8]:
```
# Mes
_= grafico_valor_activo(mu = 0.031, sig = 1, Dt = 1, N = 24, txtad = "(24 'meses')")
_= grafico_valor_activo(mu = 0.031, sig = 1, Dt = 1, N = 24*3, txtad = "(72 'meses')")
```

Otros μ's

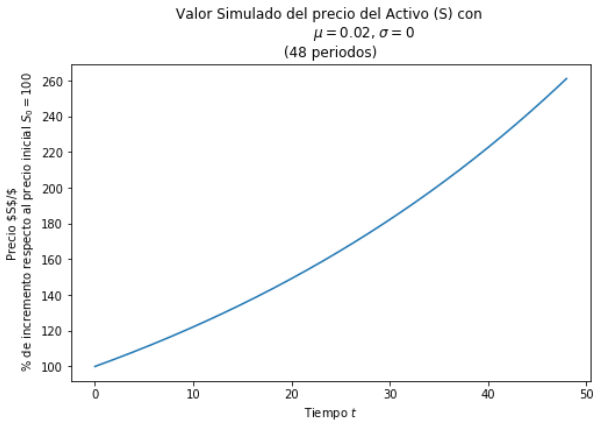
In [3]:
```
def plot_texto(texto, taman):
    plt.figure(figsize = (3,1))
    plt.axis('off')
    plt.text(0, 0, texto, fontsize=taman)
```

In [4]:

```
mus = [0.02, 0.2, 1]
sigs = [0, 0.005, 0.05, 0.4, 0.8, 1.1, 2]

for mmu in mus:
    plot_texto("$\mu$ = " + str(mmu), 30)

    for ssig in sigs:
        plot_texto("$\sigma$ = " + str(ssig), 18)
        _= grafico_valor_activo(mu = mmu, sig = ssig, Dt = 1, N = 24*2, txtad = "(48 periodos)")
```

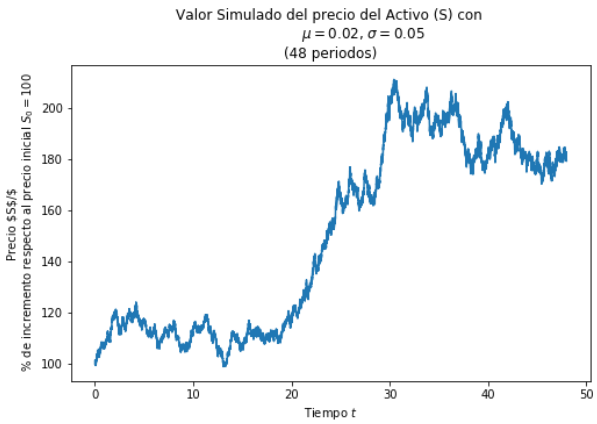
$\mu = 0.02$

$\sigma = 0$

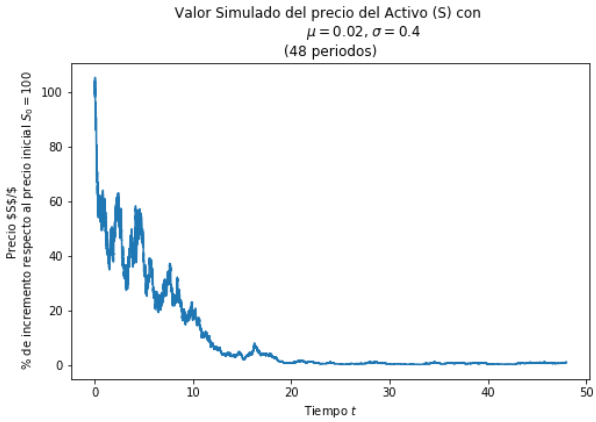


$\sigma = 0.005$

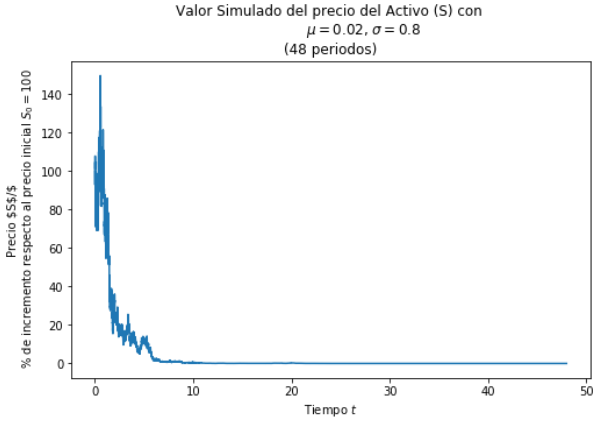
$\sigma = 0.05$



$\sigma = 0.4$



$\sigma = 0.8$

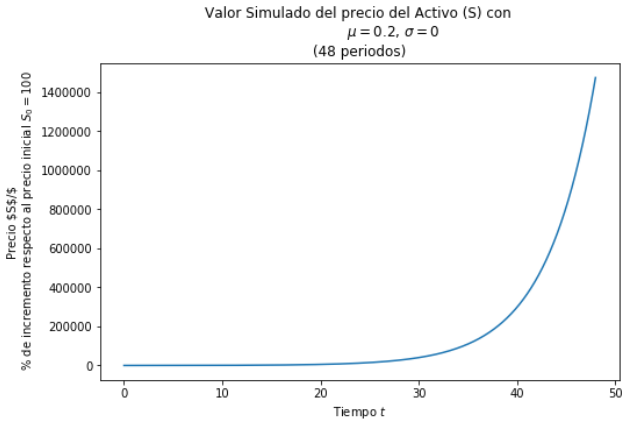


$\sigma = 1.1$

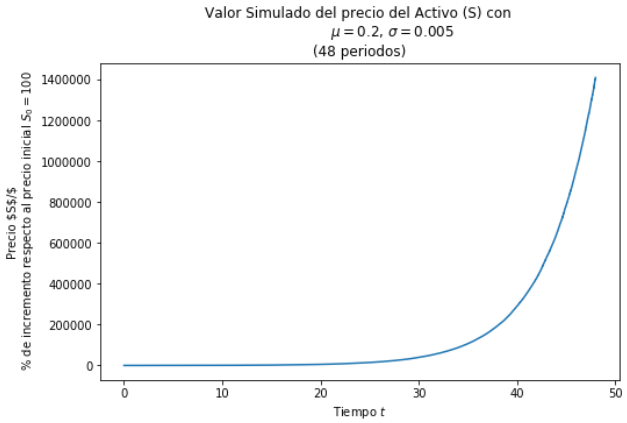
$\sigma = 2$

$\mu = 0.2$

$\sigma = 0$



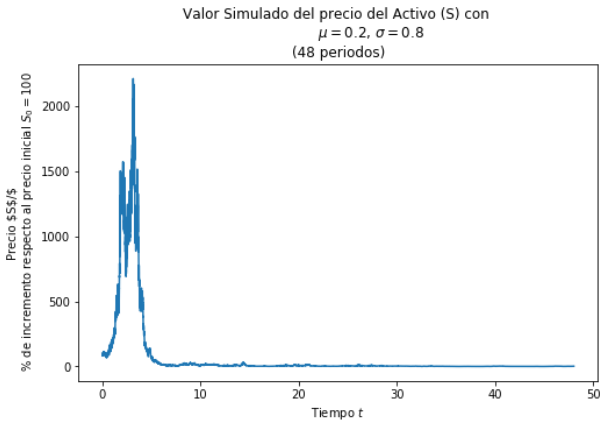
$\sigma = 0.005$



$\sigma = 0.05$

$\sigma = 0.4$

$\sigma = 0.8$



$\sigma = 1.1$

$\sigma = 2$

$\mu = 1$

$\sigma = 0$

$\sigma = 0.005$

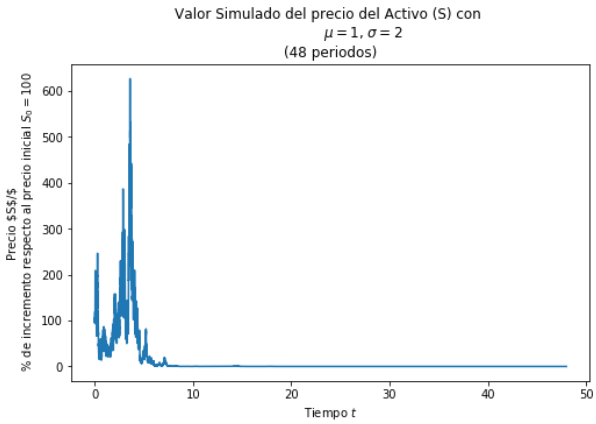
$\sigma = 0.05$

$\sigma = 0.4$

$\sigma = 0.8$

$\sigma = 1.1$

$\sigma = 2$



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