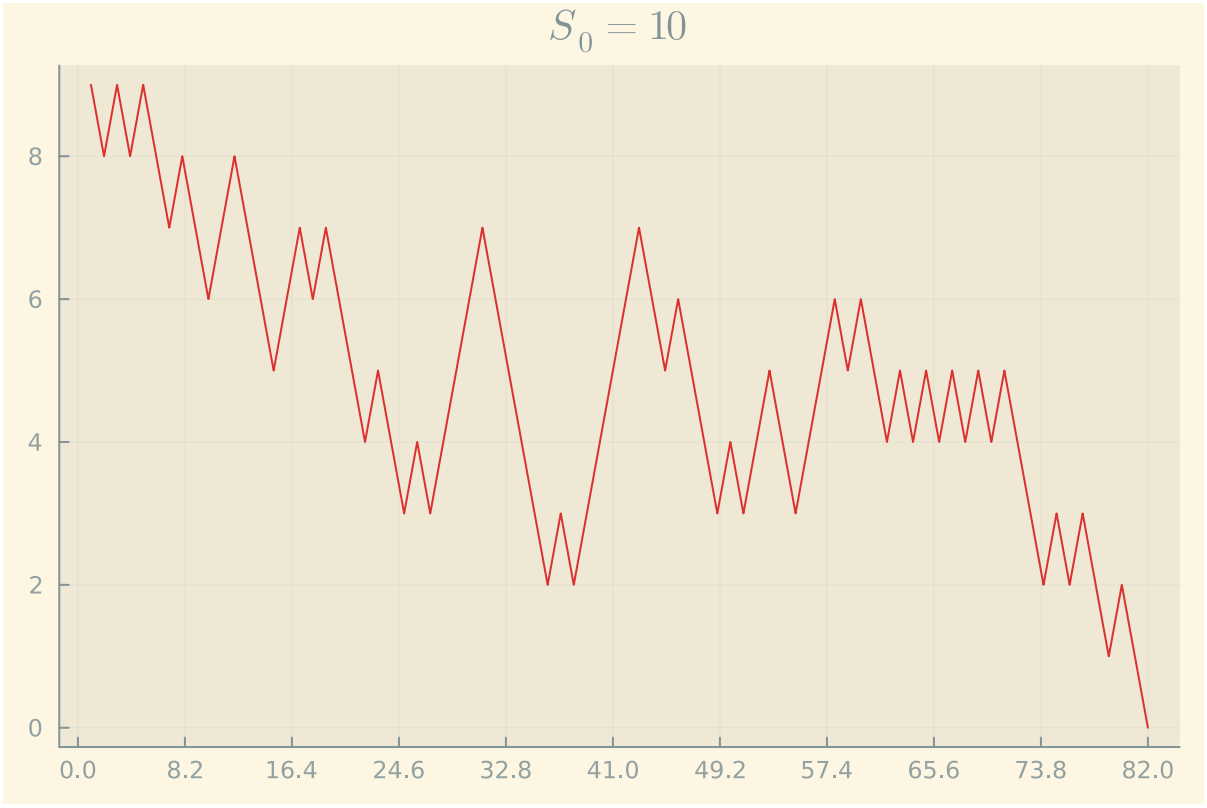
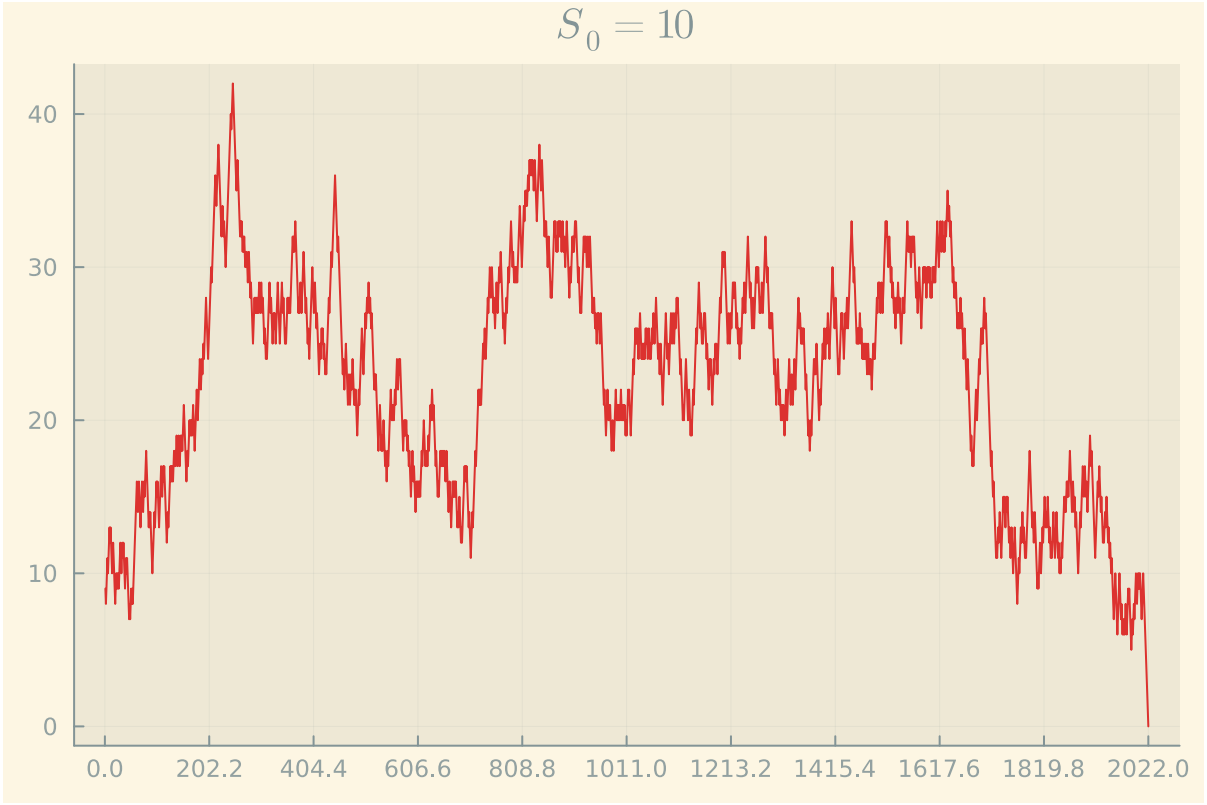
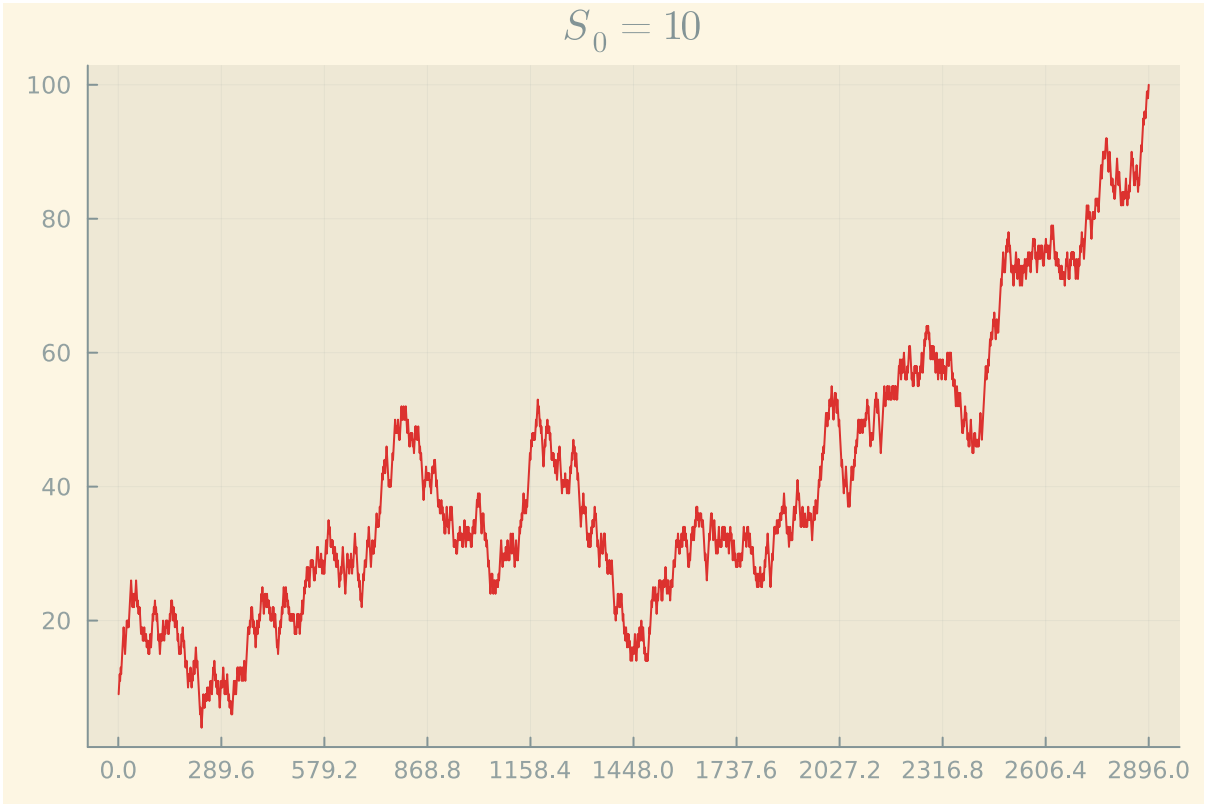
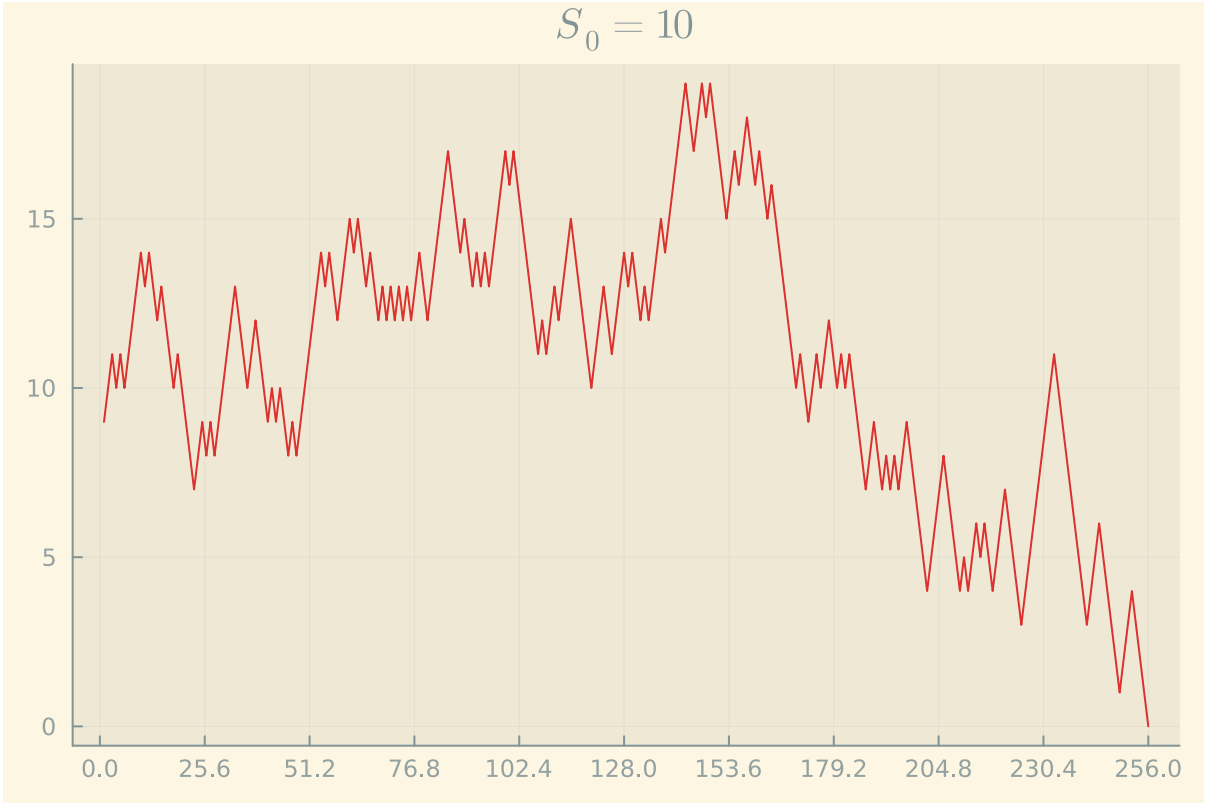
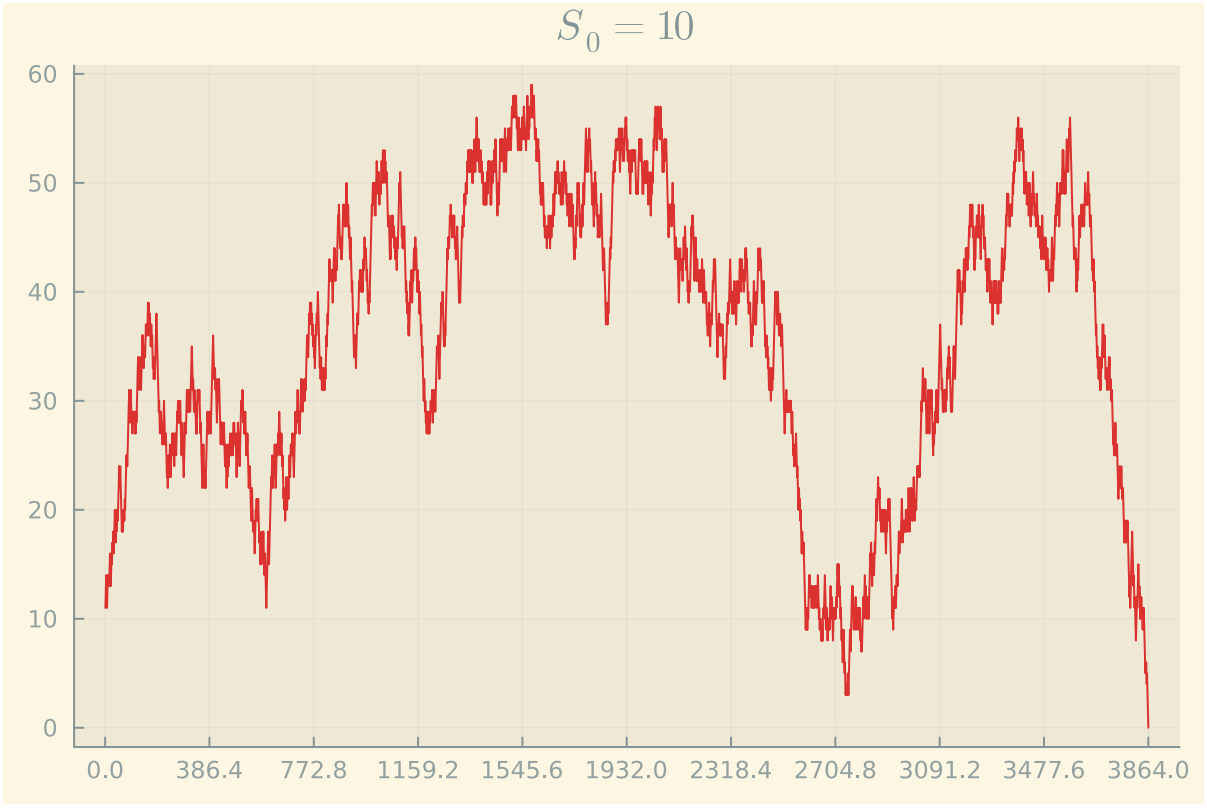
Apresentação 2

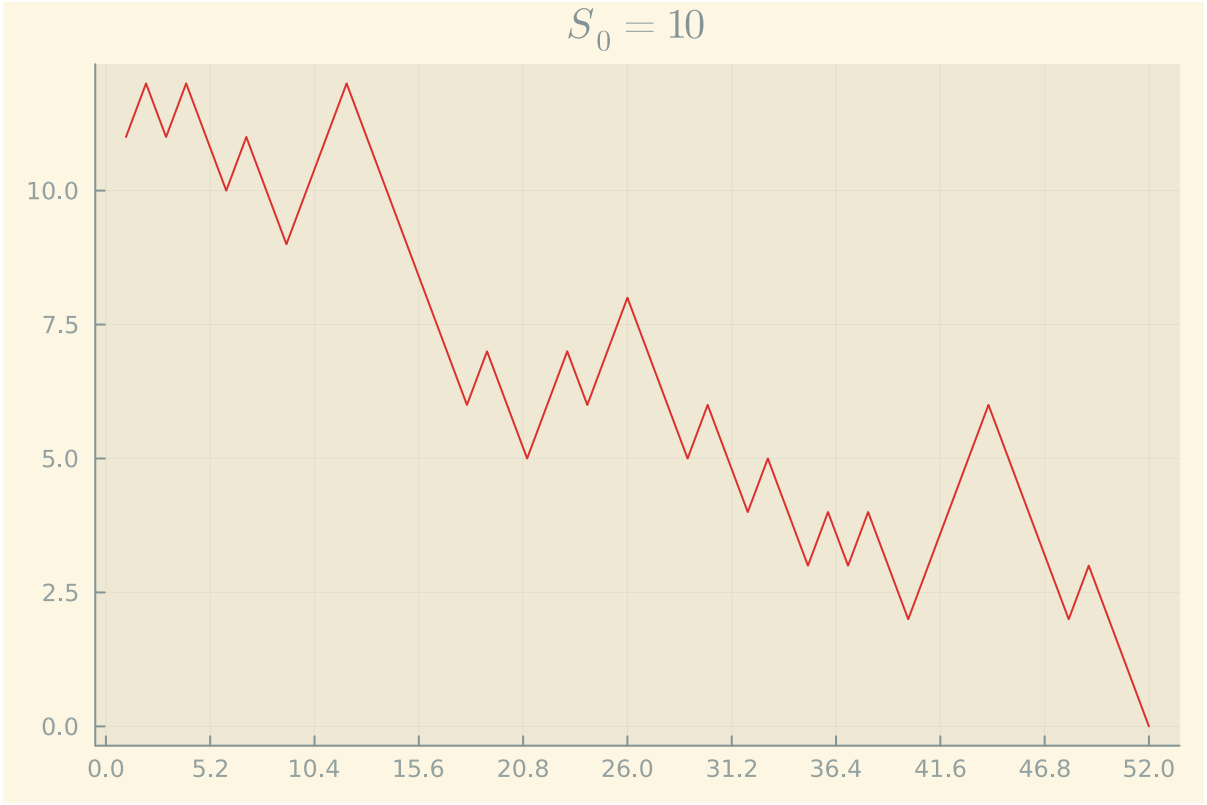

$S_0 = 10$
8
6
4
2
0
0.0
8.2
16.4
24.6
32.8
41.0
49.2
57.4
65.6
73.8
82.0


$S_0 = 10$
40
30
20
10
0
0.0
202.2
404.4
606.6
808.8
1011.0
1213.2
1415.4
1617.6
1819.8
2022.0


$S_0 = 10$
100
80
60
40
20
0.0
289.6
579.2
868.8
1158.4
1448.0
1737.6
2027.2
2316.8
2606.4
2896.0


$S_0 = 10$
15
10
5
0
0.0
25.6
51.2
76.8
102.4
128.0
153.6
179.2
204.8
230.4
256.0


$S_0 = 10$
60
50
40
30
20
10
0
0.0
386.4
772.8
1159.2
1545.6
1932.0
2318.4
2704.8
3091.2
3477.6
3864.0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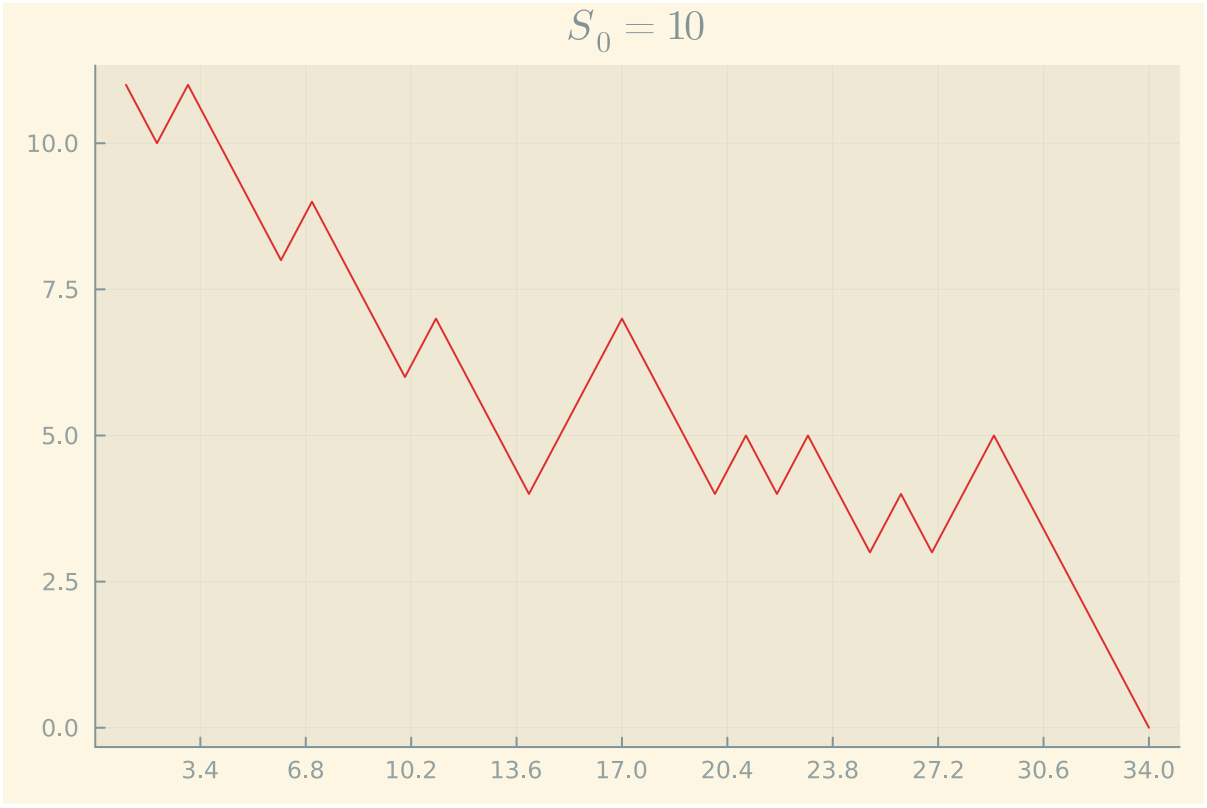
10.0
7.5
5.0
2.5
0.0
0.0
5.2
10.4
15.6
20.8
26.0
31.2
36.4
41.6
46.8
52.0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7.5
5.0
2.5
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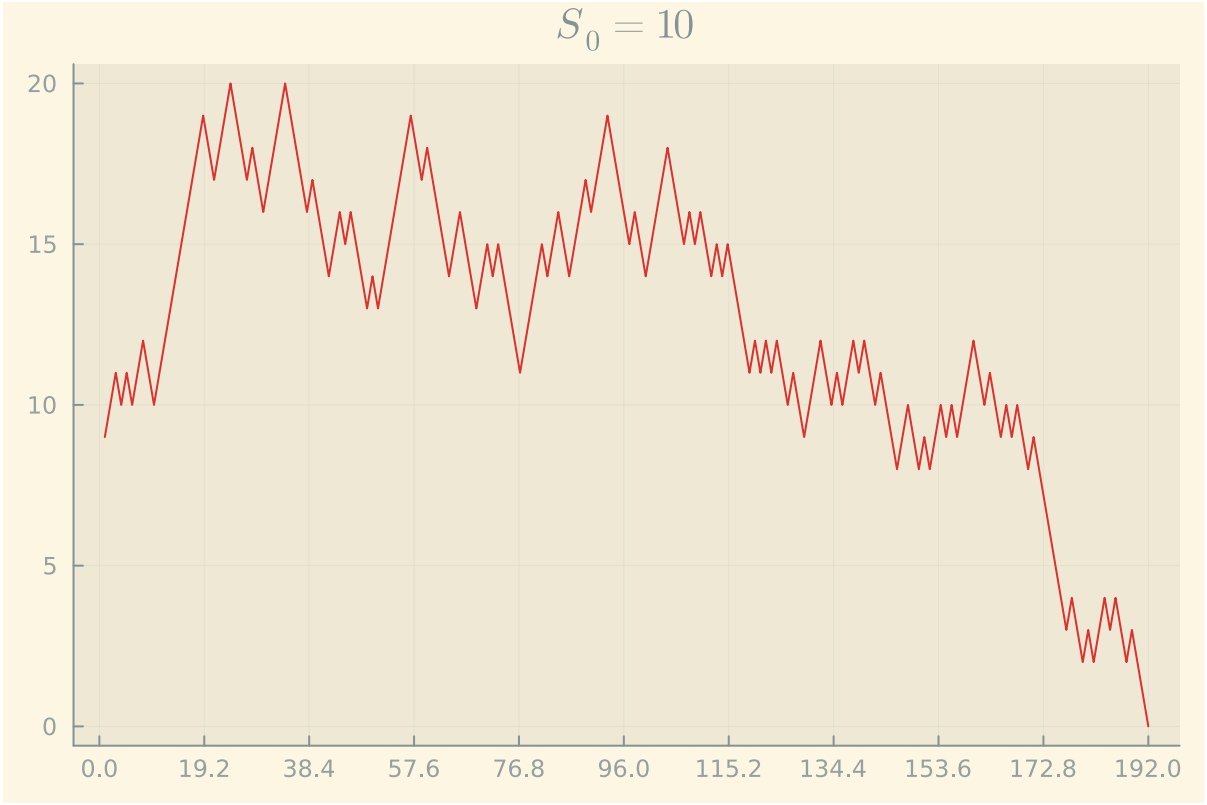
3.4
6.8
10.2
13.6
17.0
20.4
23.8
27.2
30.6
34.0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15
10
5
0
0.0
19.2
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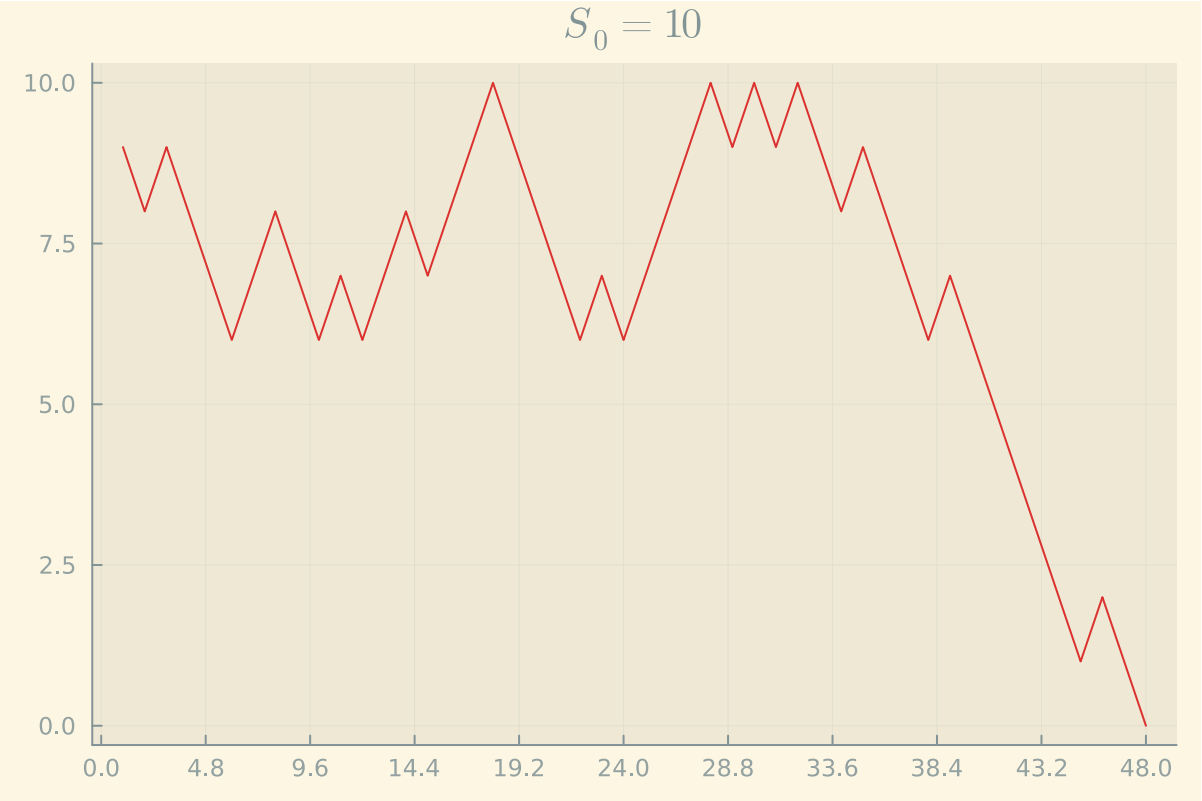
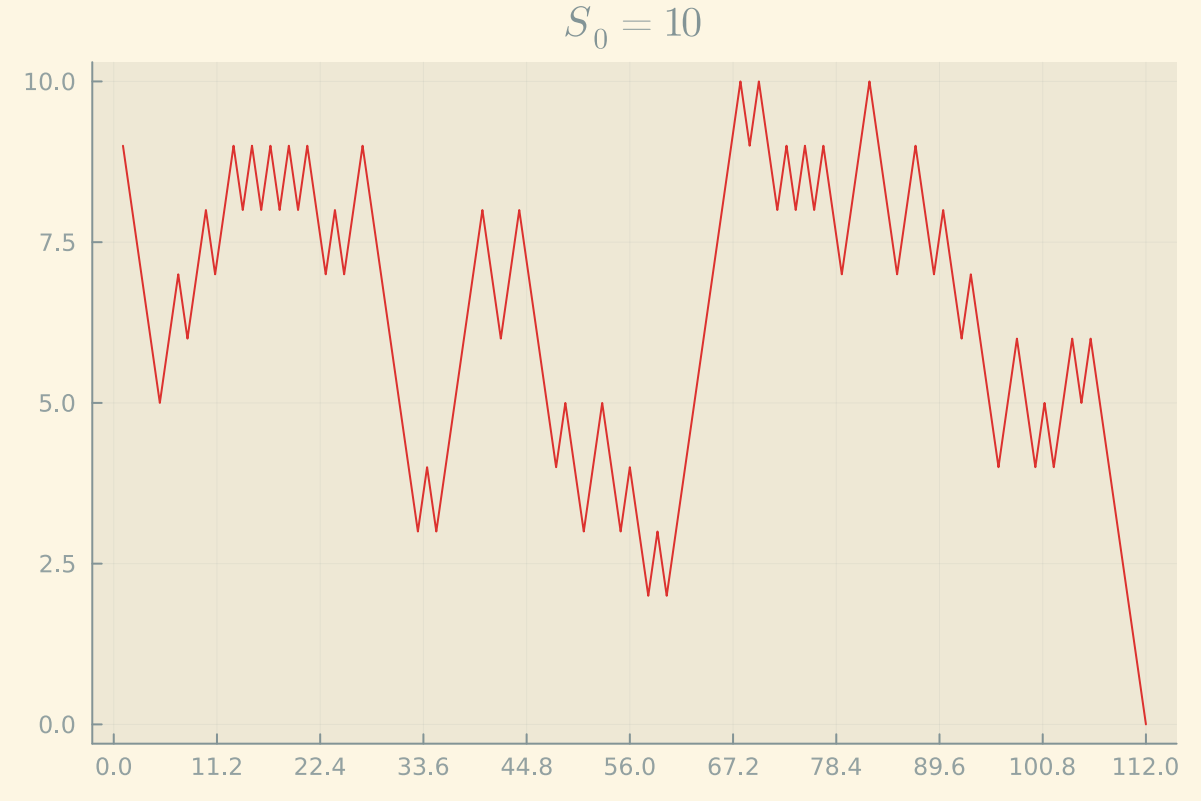
76.8
96.0
115.2
134.4
153.6
172.8
192.0


$S_0 = 10$
10.0
7.5
5.0
2.5
0.0
0.0
4.8
9.6
14.4
19.2
24.0
28.8
33.6
38.4
43.2
48.0


$S_0 = 10$
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5.0
2.5
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0.0
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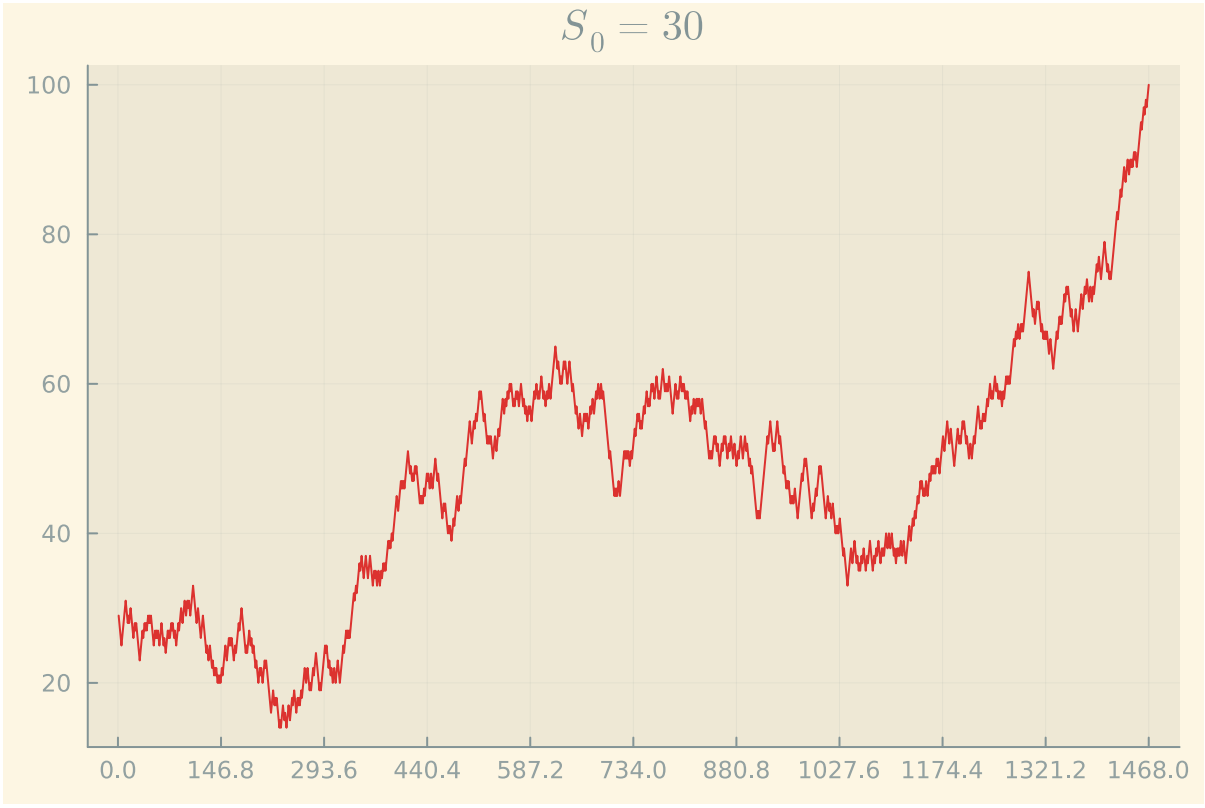
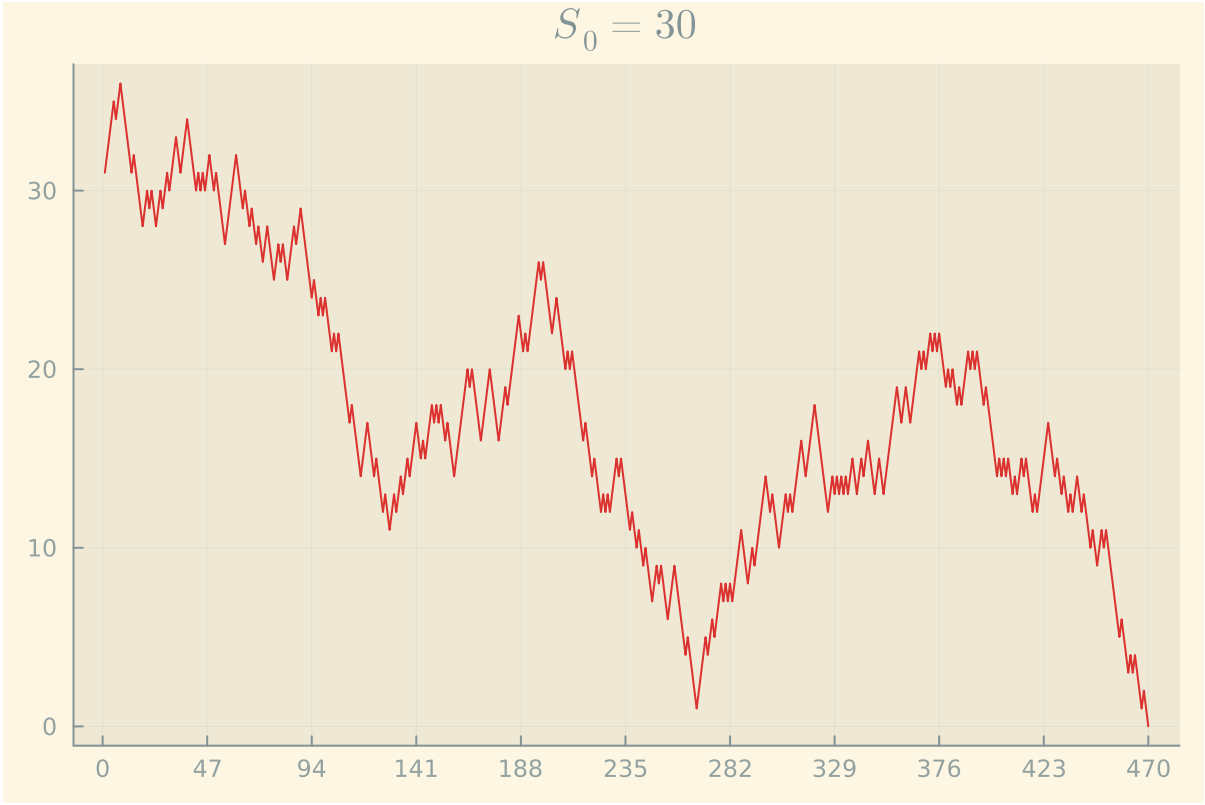
22.4
33.6
44.8
56.0
67.2
78.4
89.6
100.8
112.0


$S_0 = 30$
100
80
60
40
20
0.0
146.8
293.6
440.4
587.2
734.0
880.8
1027.6
1174.4
1321.2
1468.0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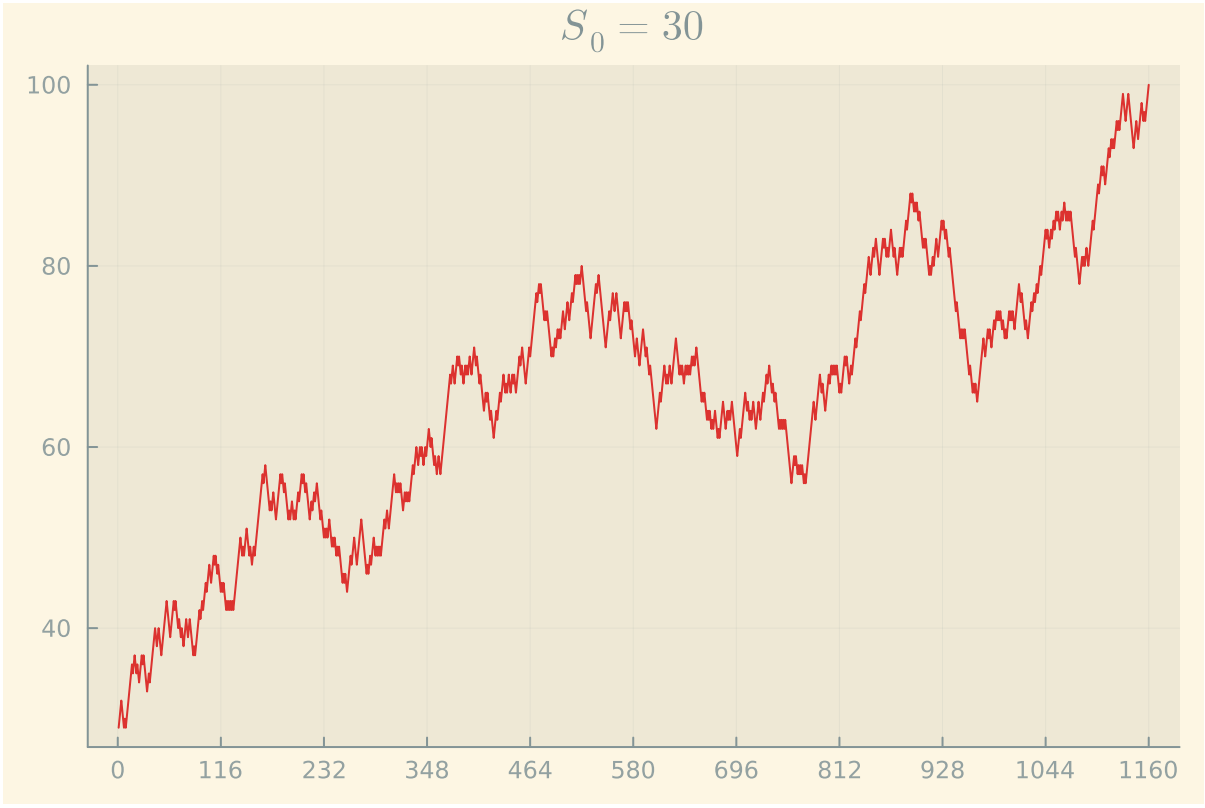
0
47
94
141
188
235
282
329
376
423
470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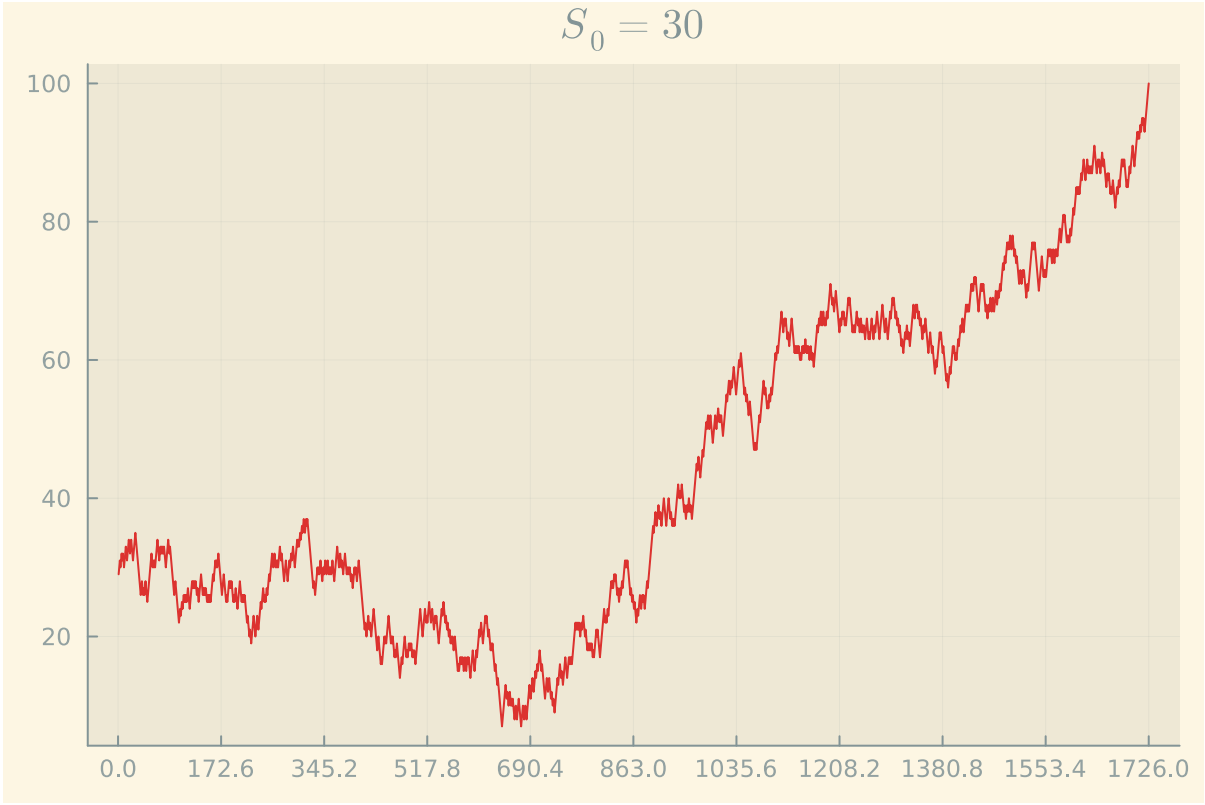
40
0
116
232
348
464
580
696
812
928
1044
1160


$S_0 = 30$
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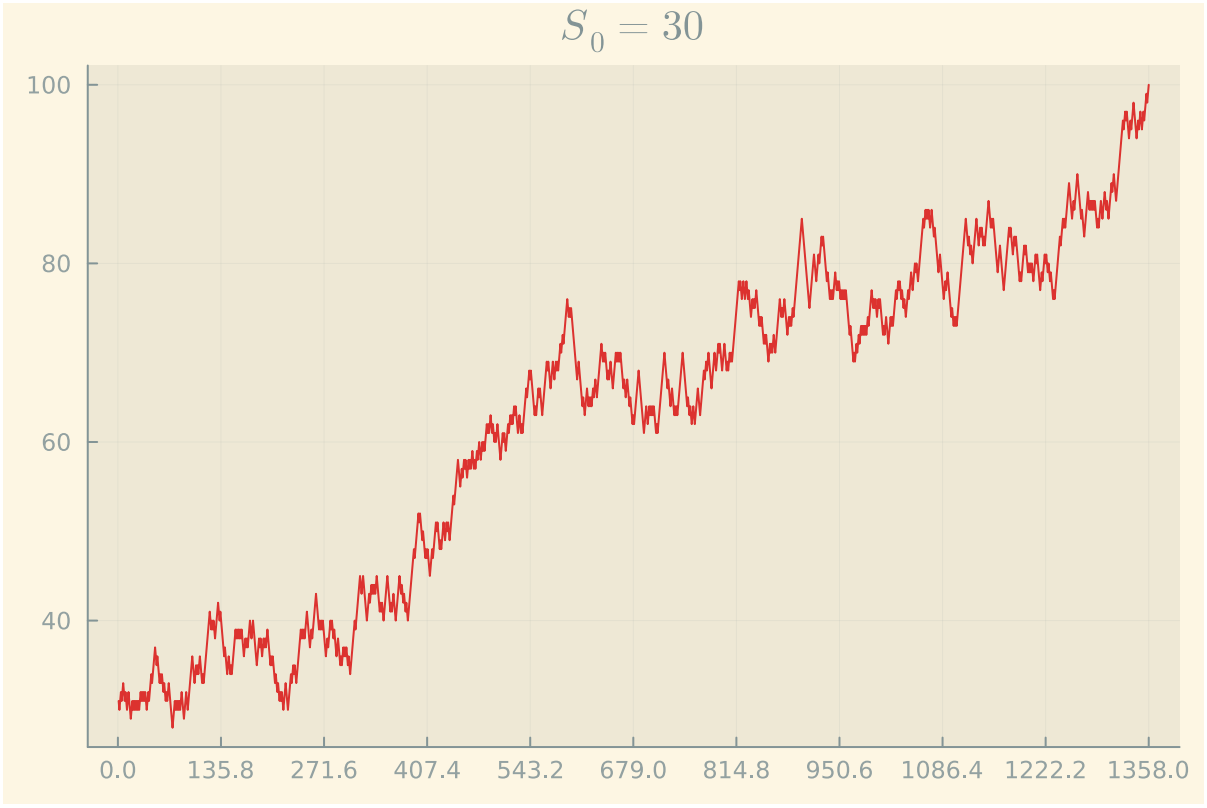
80
60
40
20
0.0
172.6
345.2
517.8
690.4
863.0
1035.6
1208.2
1380.8
1553.4
1726.0


$S_0 = 30$
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80
60
40
0.0
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271.6
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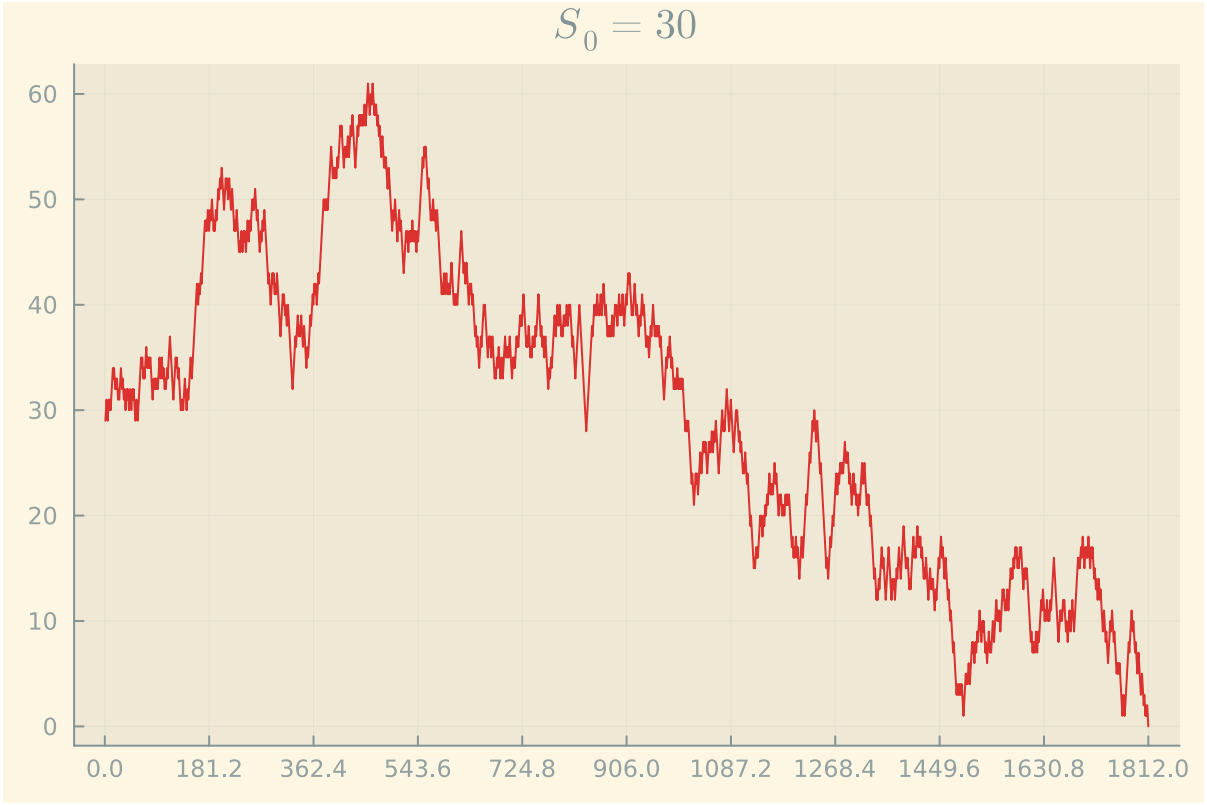
543.2
679.0
814.8
950.6
1086.4
1222.2
1358.0


$S_0 = 30$
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50
40
30
20
10
0
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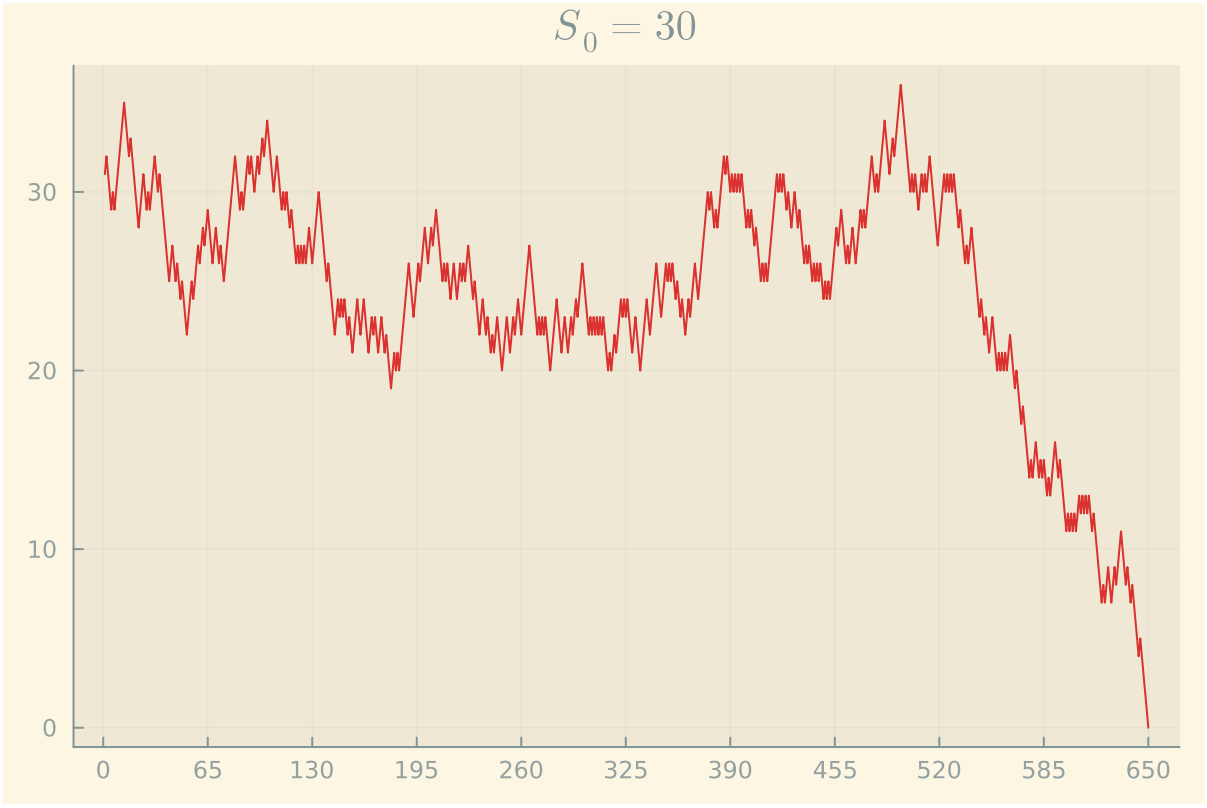
543.6
724.8
906.0
1087.2
1268.4
1449.6
1630.8
1812.0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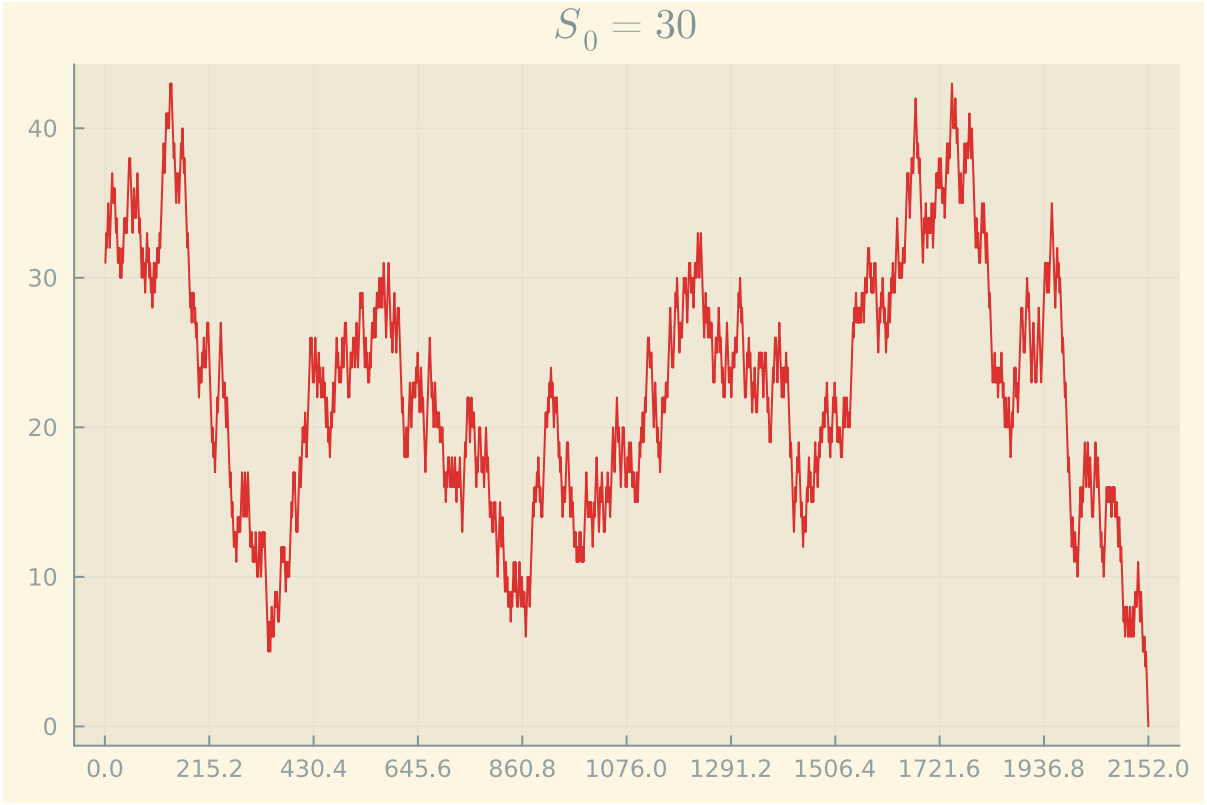
20
10
0
0
65
130
195
260
325
390
455
520
585
650


$S_0 = 30$
40
30
20
10
0
0.0
215.2
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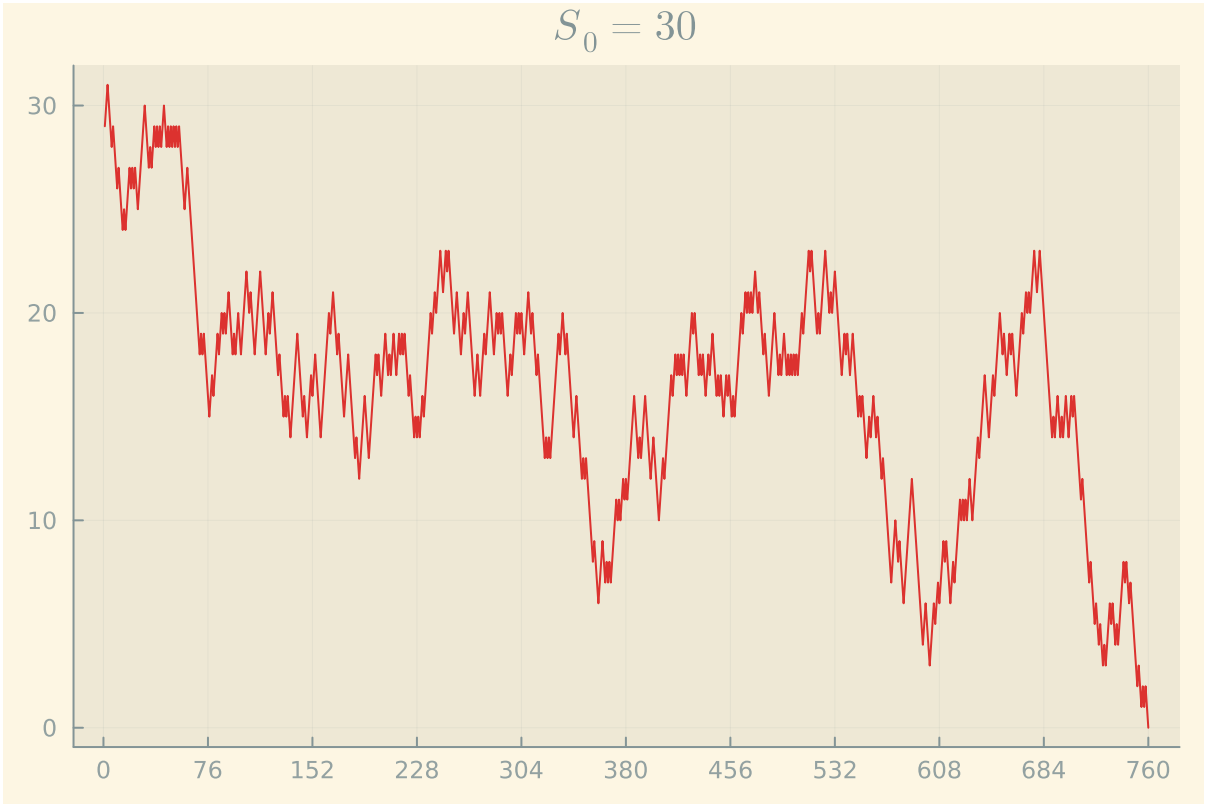
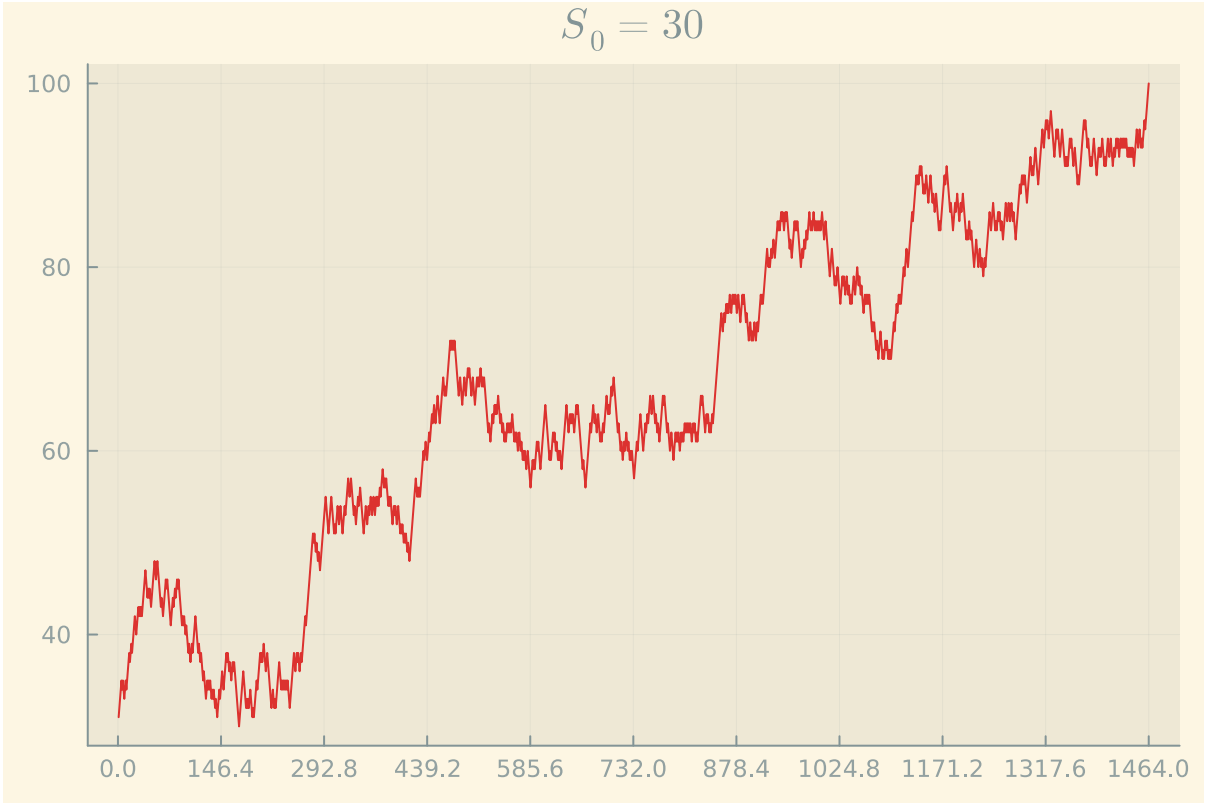
645.6
860.8
1076.0
1291.2
1506.4
1721.6
1936.8
2152.0


$S_0 = 30$
30
20
10
0
0
76
152
228
304
380
456
532
608
684
760


$S_0 = 30$
100
80
60
40
0.0
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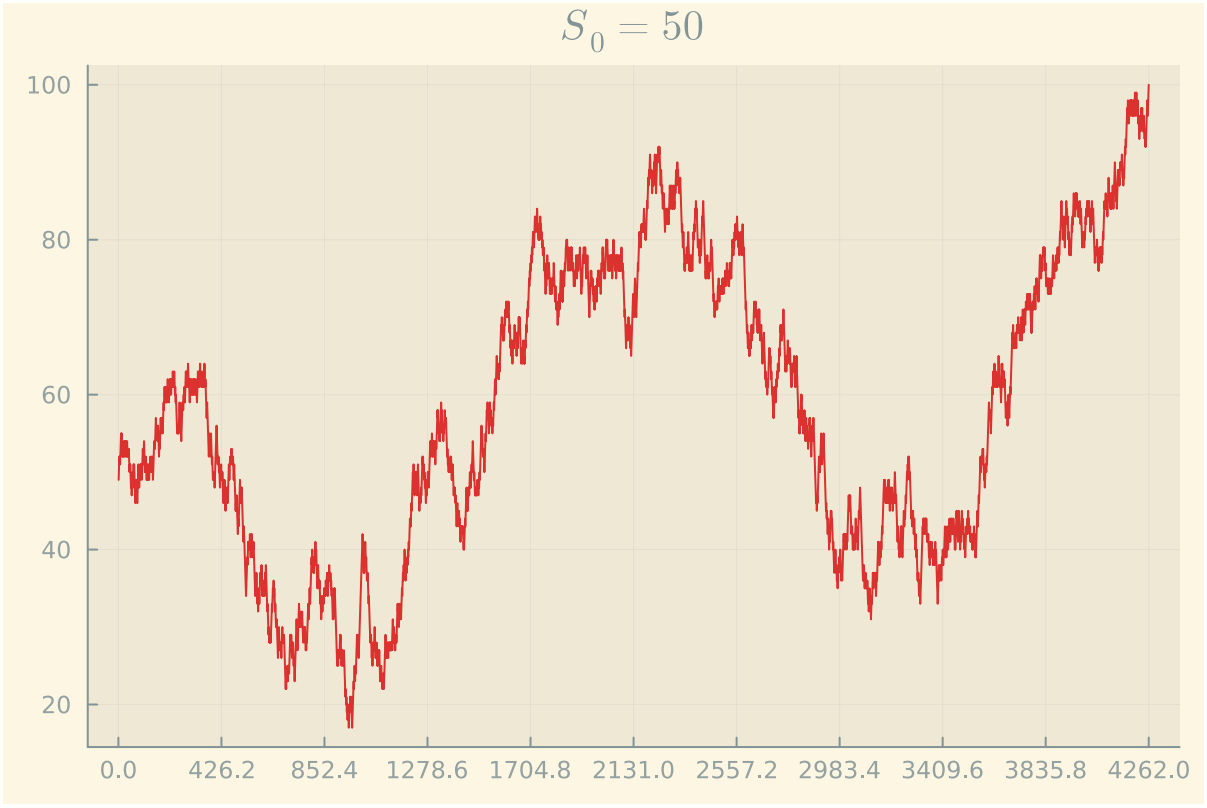
292.8
439.2
585.6
732.0
878.4
1024.8
1171.2
1317.6
1464.0


$S_0 = 50$
100
80
60
40
20
0.0
426.2
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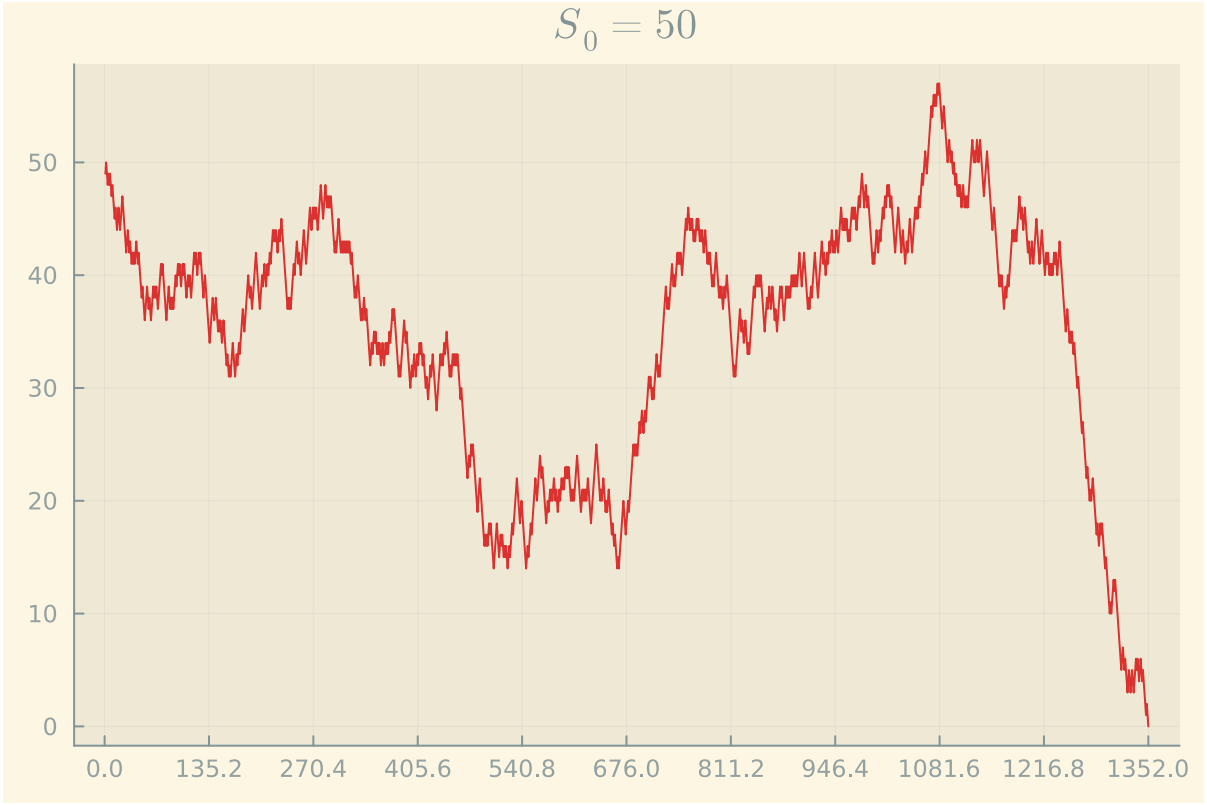
1278.6
1704.8
2131.0
2557.2
2983.4
3409.6
3835.8
4262.0


$S_0 = 50$
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30
20
10
0
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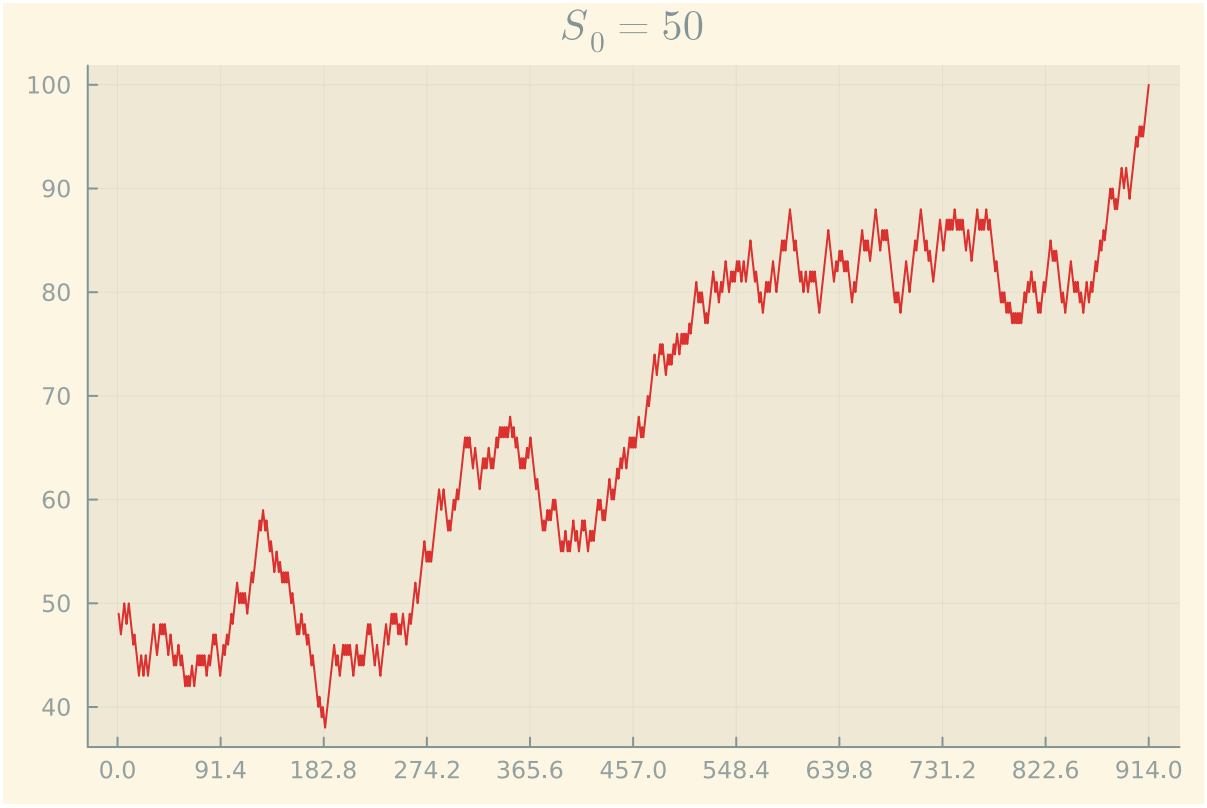
405.6
540.8
676.0
811.2
946.4
1081.6
1216.8
1352.0


$S_0 = 50$
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70
60
50
40
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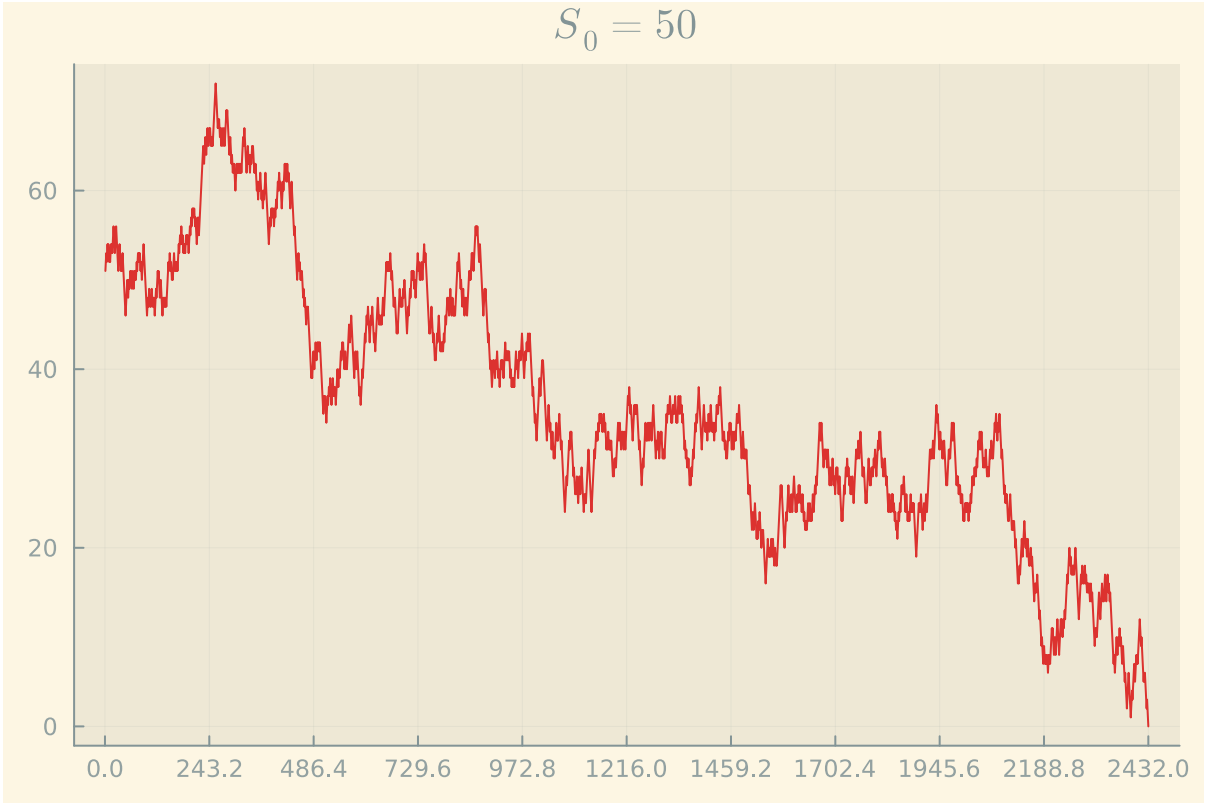
182.8
274.2
365.6
457.0
548.4
639.8
731.2
822.6
914.0


$S_0 = 50$
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40
20
0
0.0
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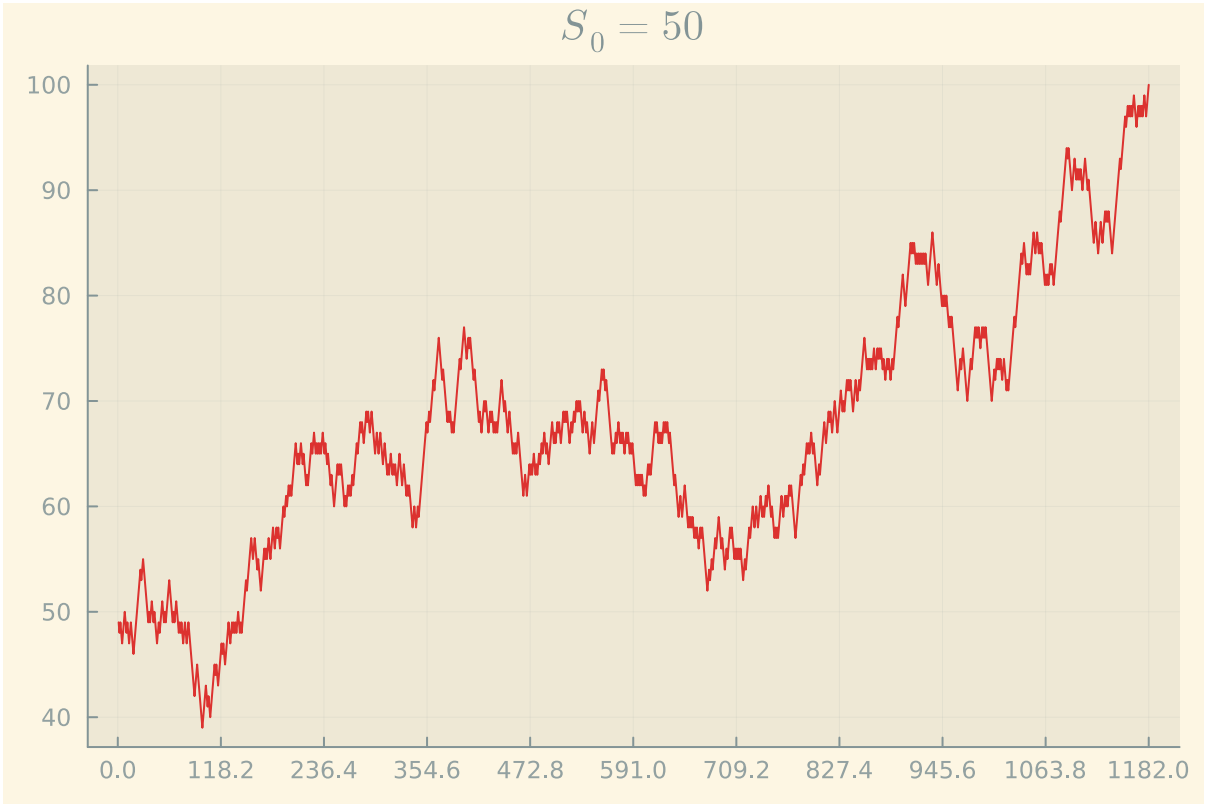
729.6
972.8
1216.0
1459.2
1702.4
1945.6
2188.8
2432.0


$S_0 = 50$
100
90
80
70
60
50
40
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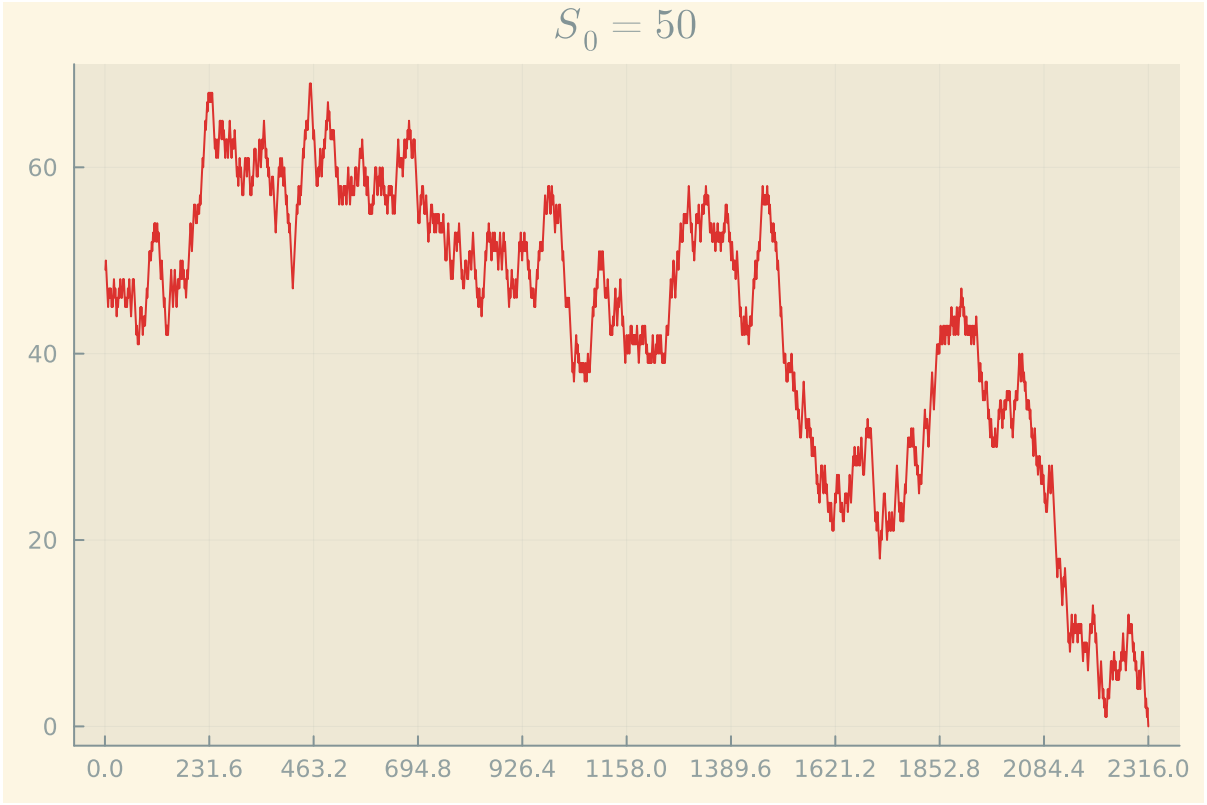
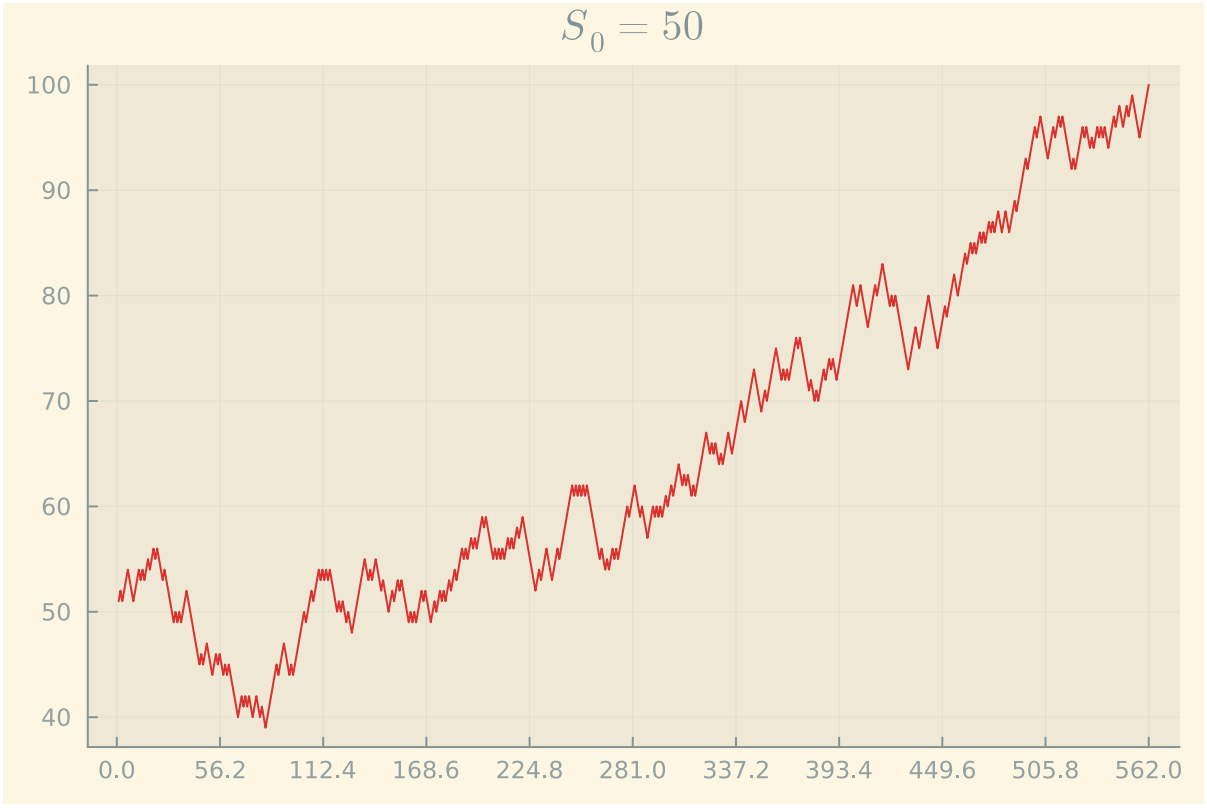
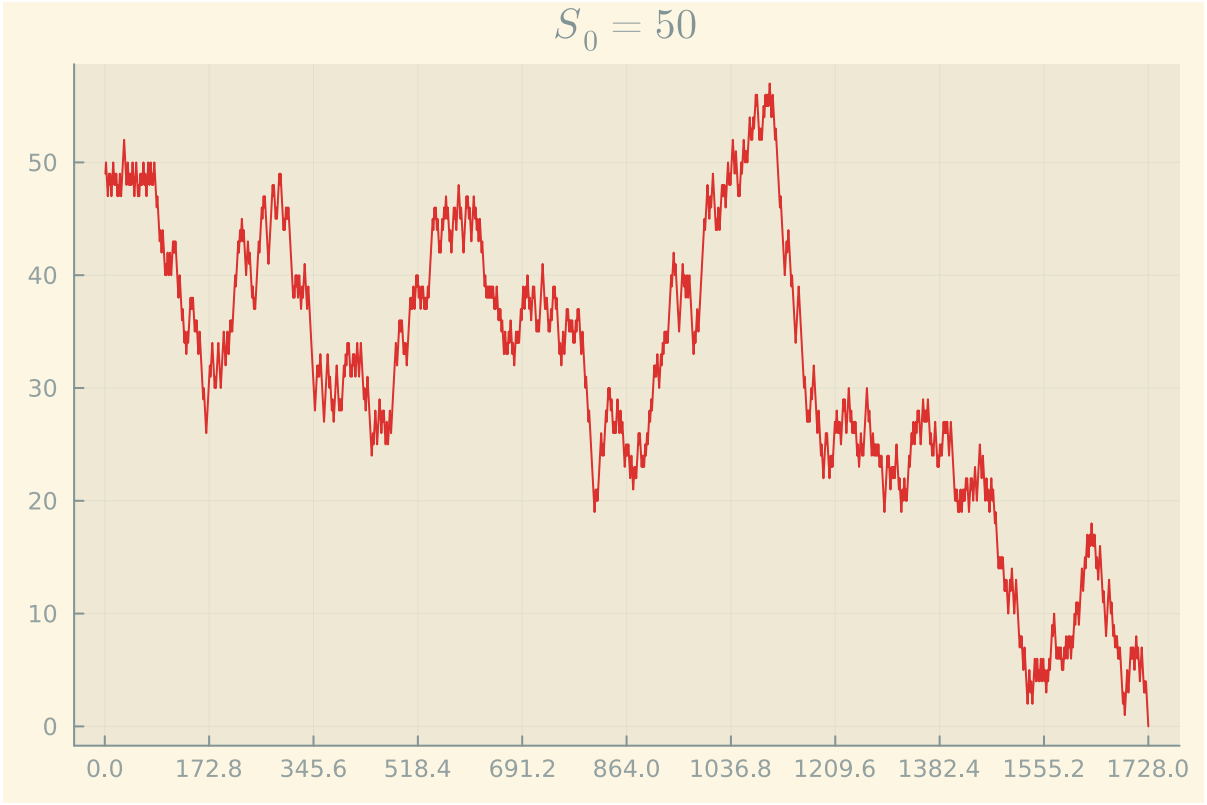
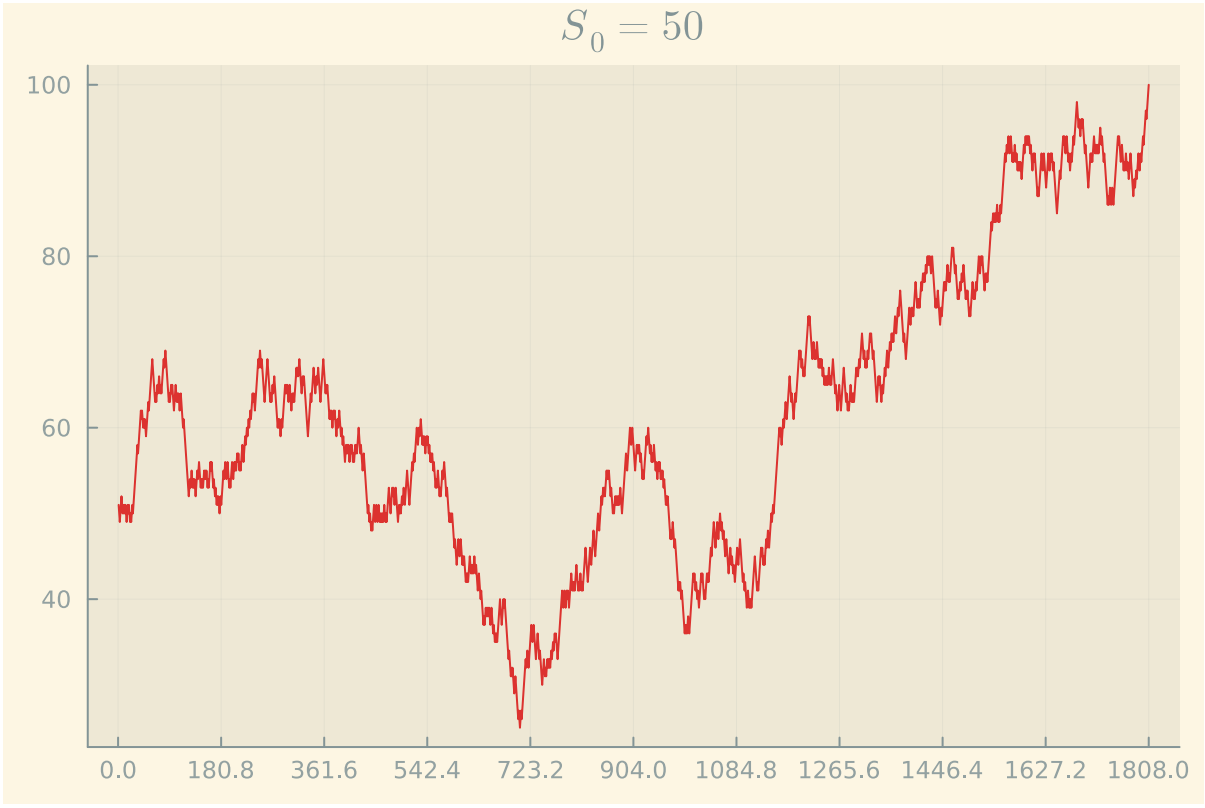
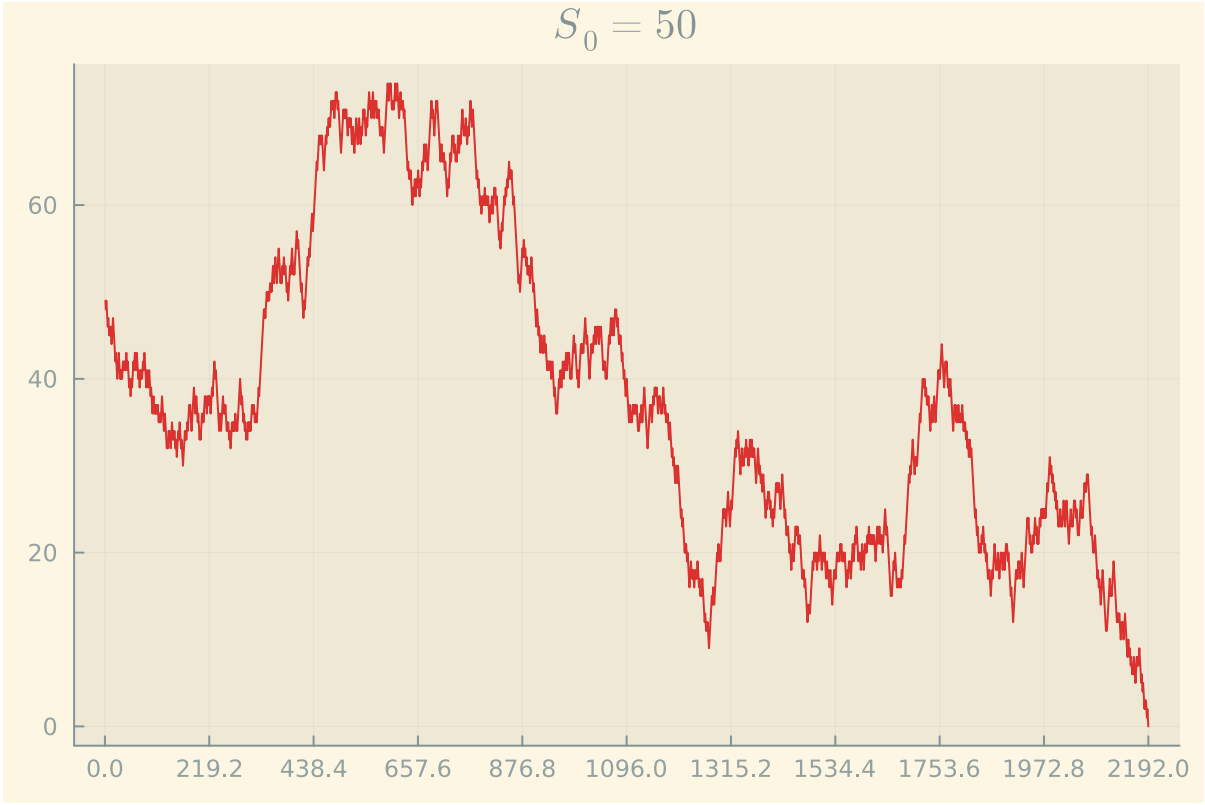
236.4
354.6
472.8
591.0
709.2
827.4
945.6
1063.8
1182.0

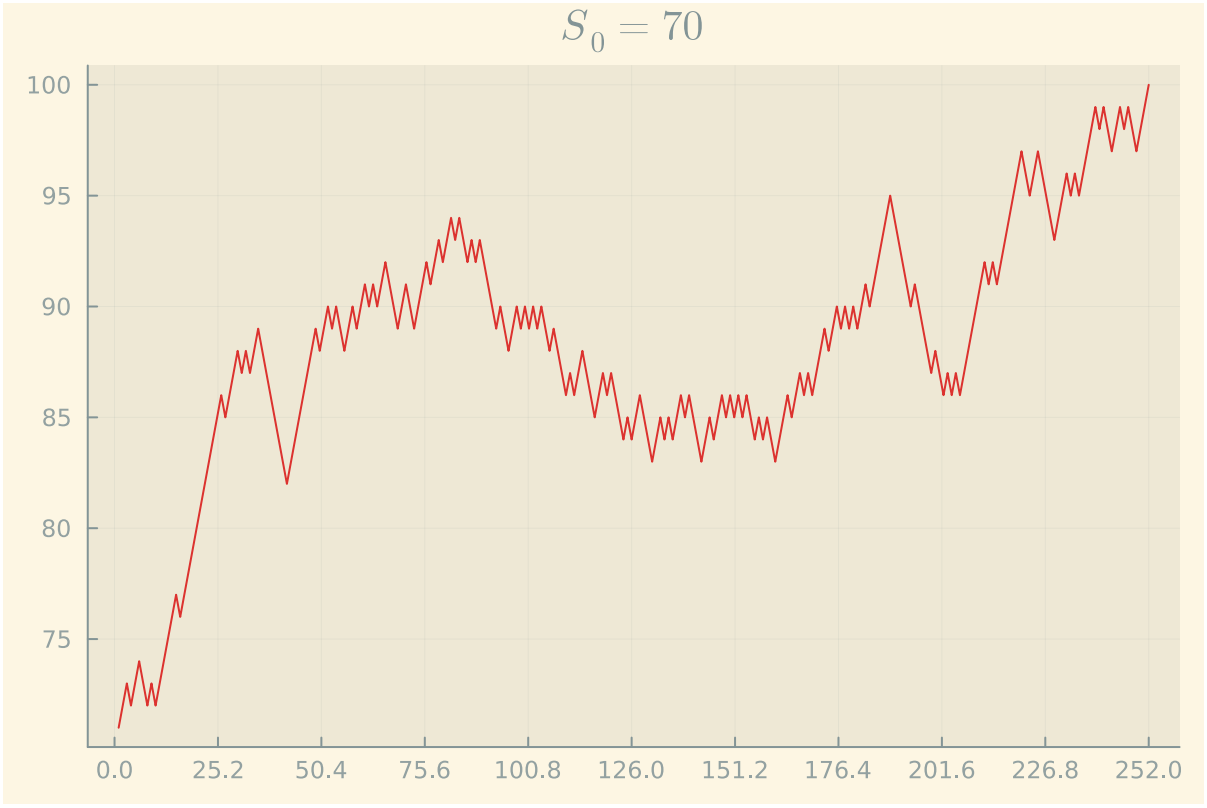

$S_0 = 50$
60
40
20
0
0.0
231.6
463.2
694.8
926.4
1158.0
1389.6
1621.2
1852.8
2084.4
2316.0

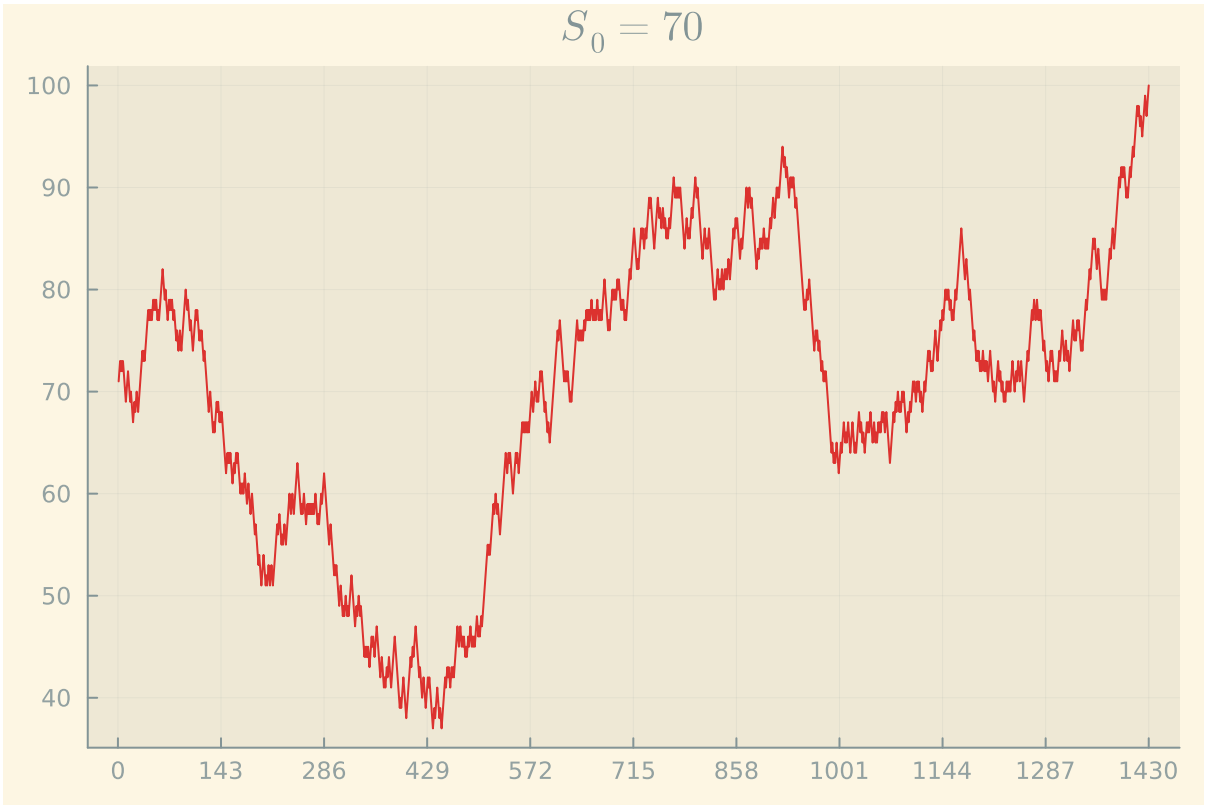

$S_0 = 50$
100
90
80
70
60
50
40
0.0
56.2
112.4
168.6
224.8
281.0
337.2
393.4
449.6
505.8
562.0


$S_0 = 50$
50
40
30
20
10
0
0.0
172.8
345.6
518.4
691.2
864.0
1036.8
1209.6
1382.4
1555.2
1728.0


$S_0 = 50$
100
80
60
40
0.0
180.8
361.6
542.4
723.2
904.0
1084.8
1265.6
1446.4
1627.2
1808.0


$S_0 = 50$
60
40
20
0
0.0
219.2
438.4
657.6
876.8
1096.0
1315.2
1534.4
1753.6
1972.8
2192.0


$S_0 = 70$
100
95
90
85
80
75
0.0
25.2
50.4
75.6
100.8
126.0
151.2
176.4
201.6
226.8
252.0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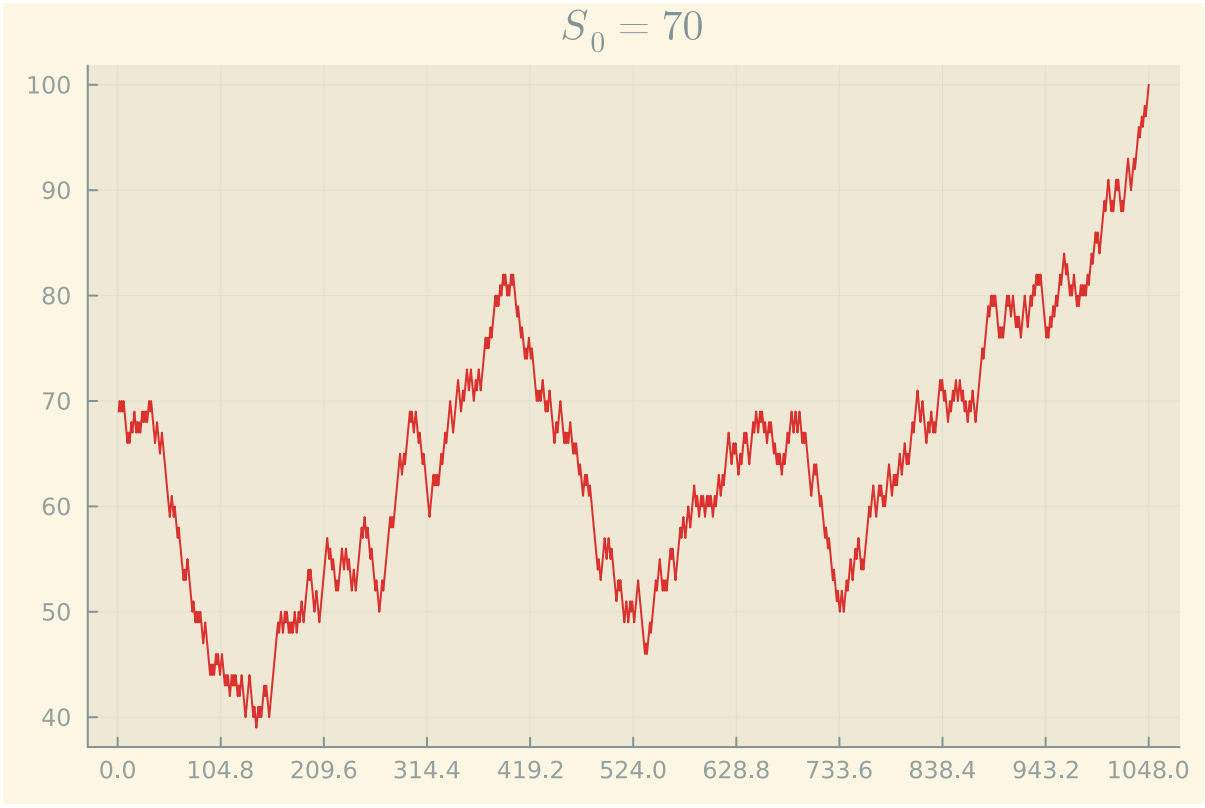
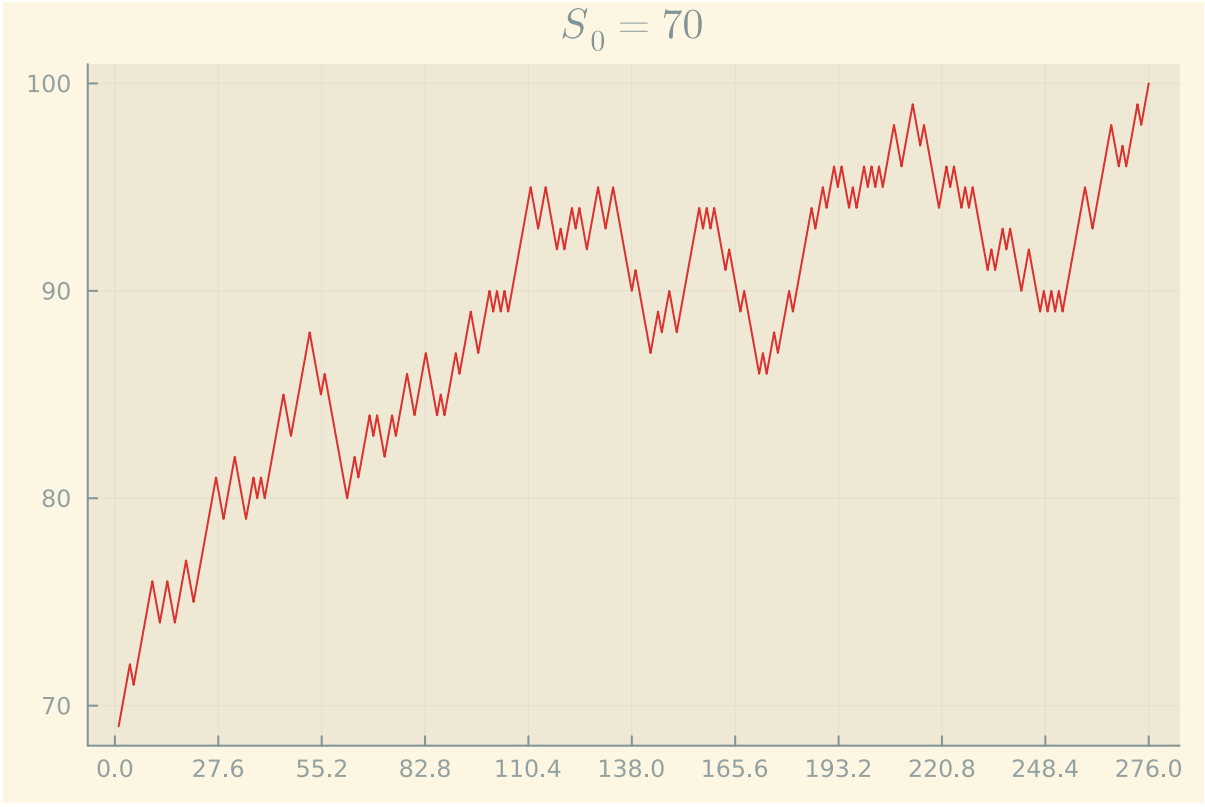
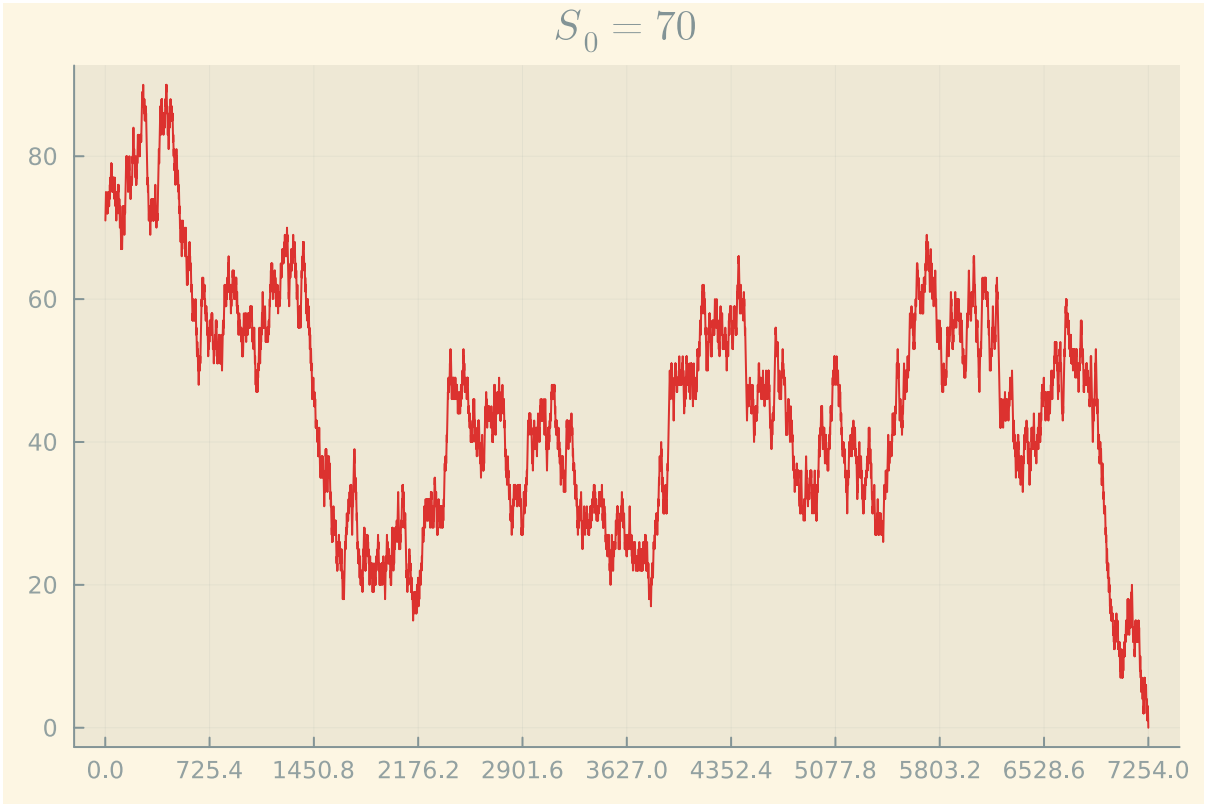
80
70
60
50
40
0
143
286
429
572
715
858
1001
1144
1287
1430


$S_0 = 70$
100
90
80
70
60
50
40
0.0
104.8
209.6
314.4
419.2
524.0
628.8
733.6
838.4
943.2
1048.0


$S_0 = 70$
100
90
80
70
0.0
27.6
55.2
82.8
110.4
138.0
165.6
193.2
220.8
248.4
276.0


$S_0 = 70$
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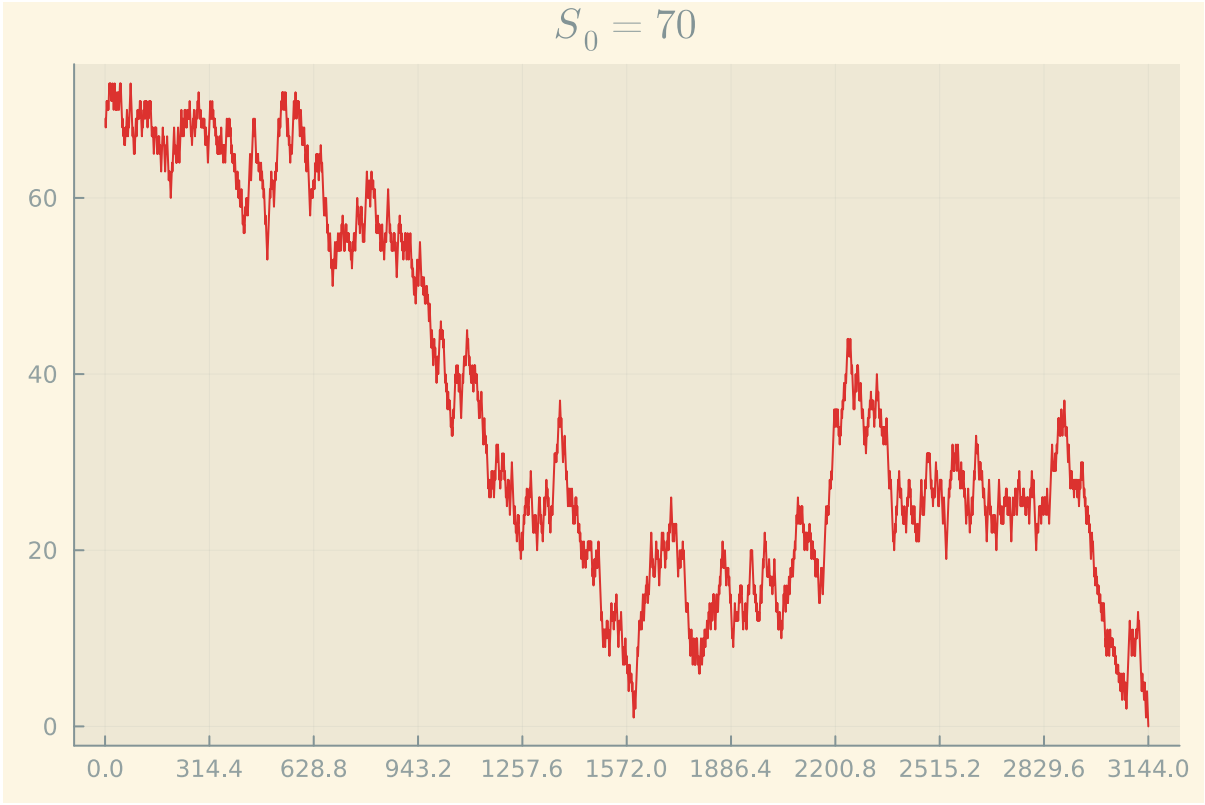
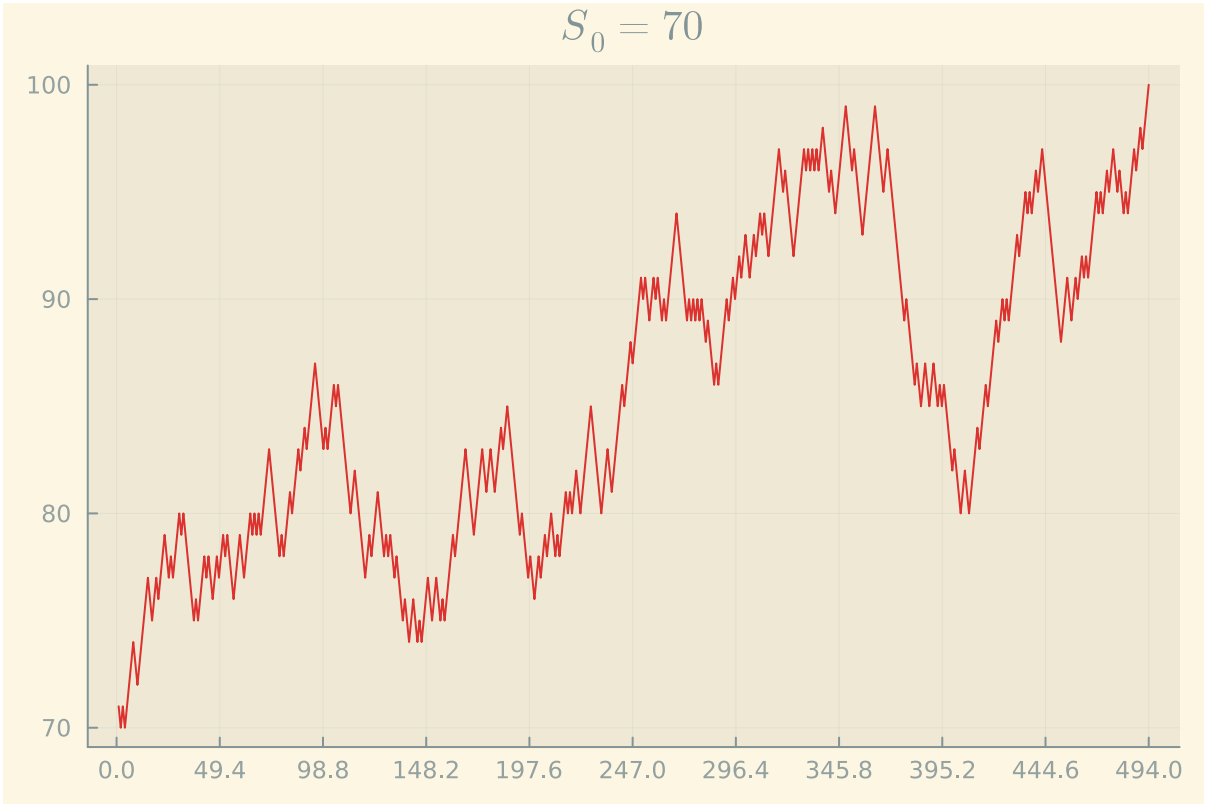
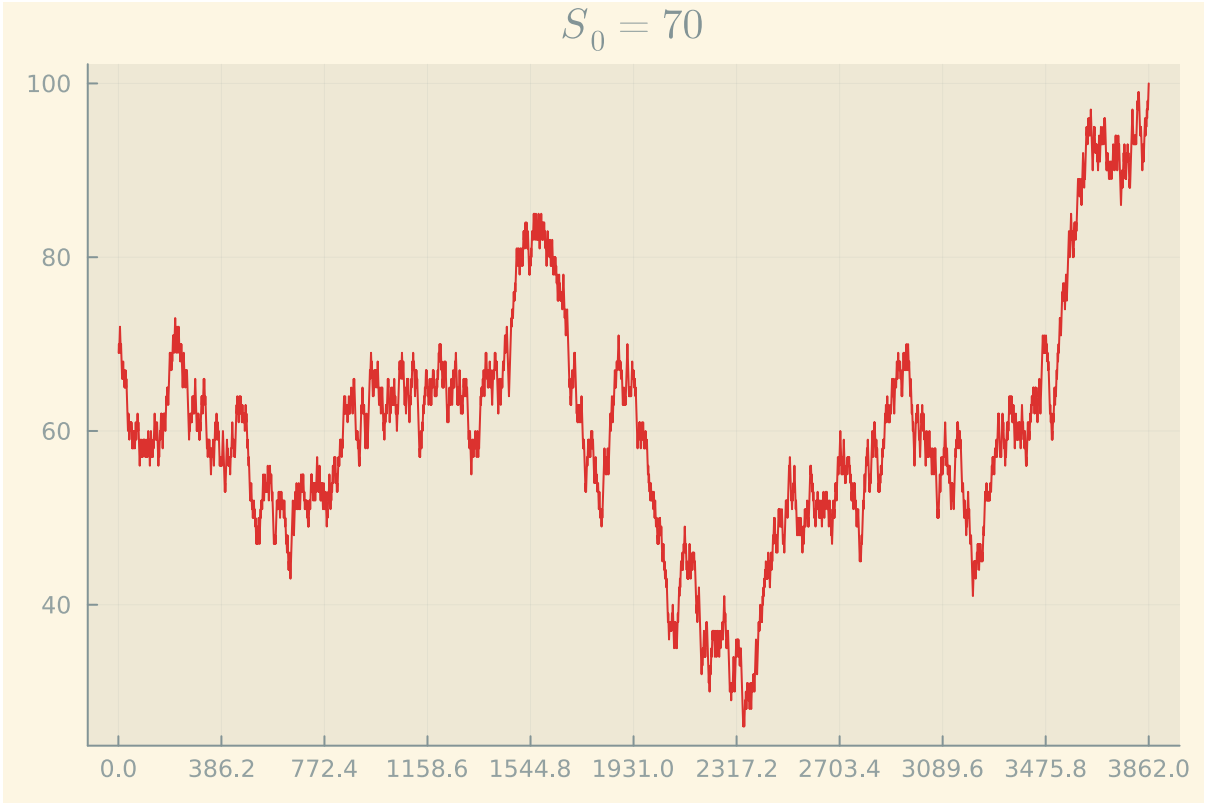
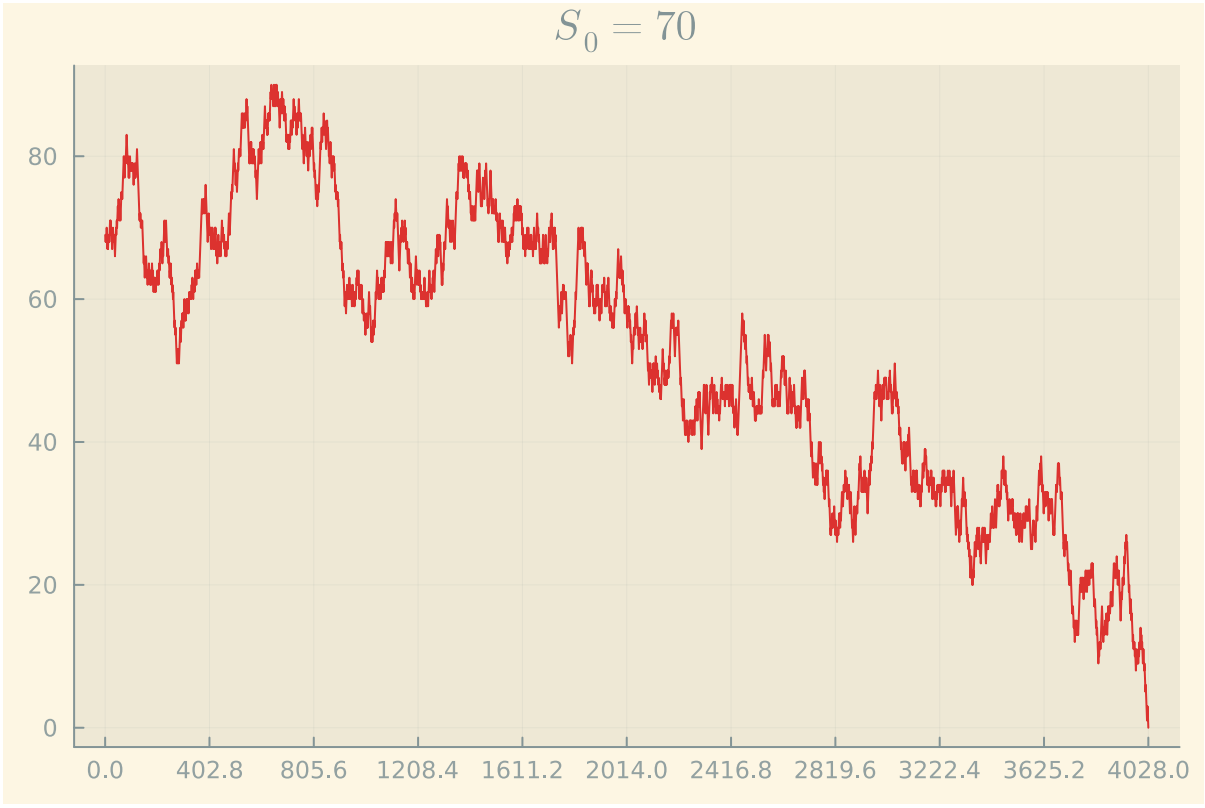
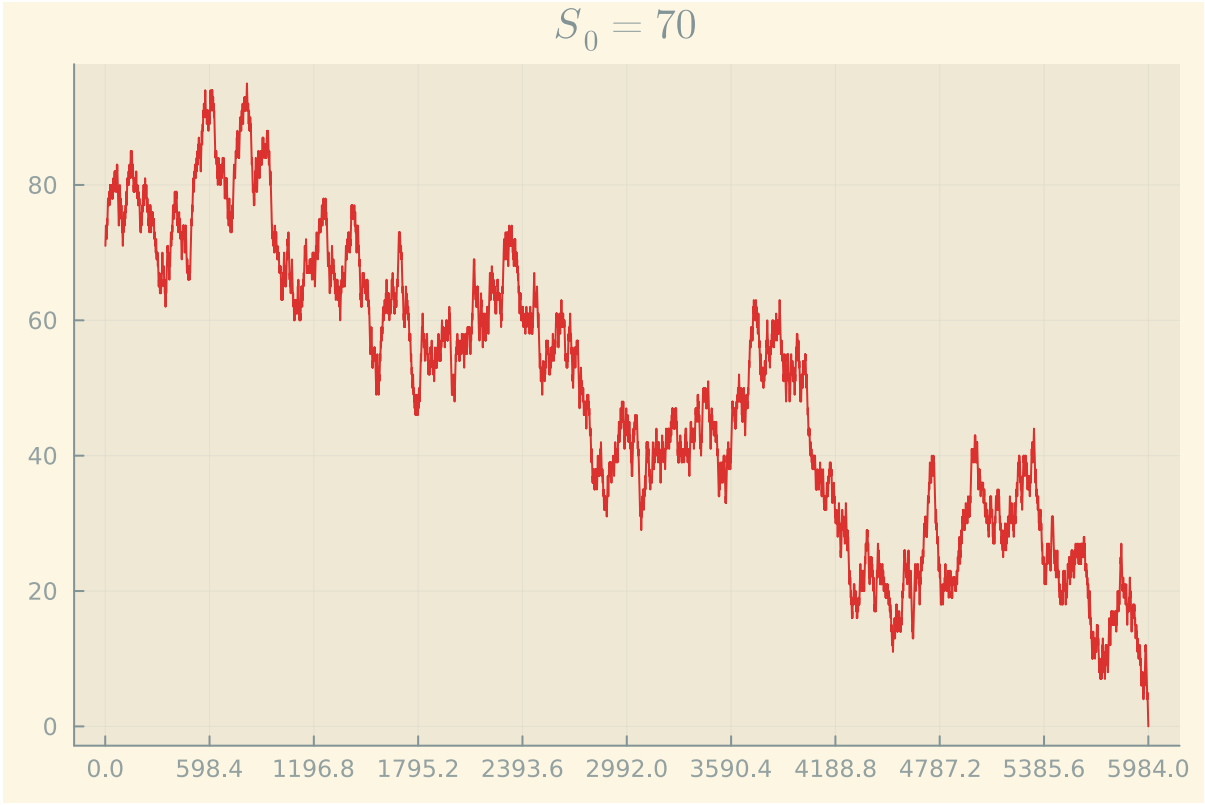
60
40
20
0
0.0
725.4
1450.8
2176.2
2901.6
3627.0
4352.4
5077.8
5803.2
6528.6
7254.0

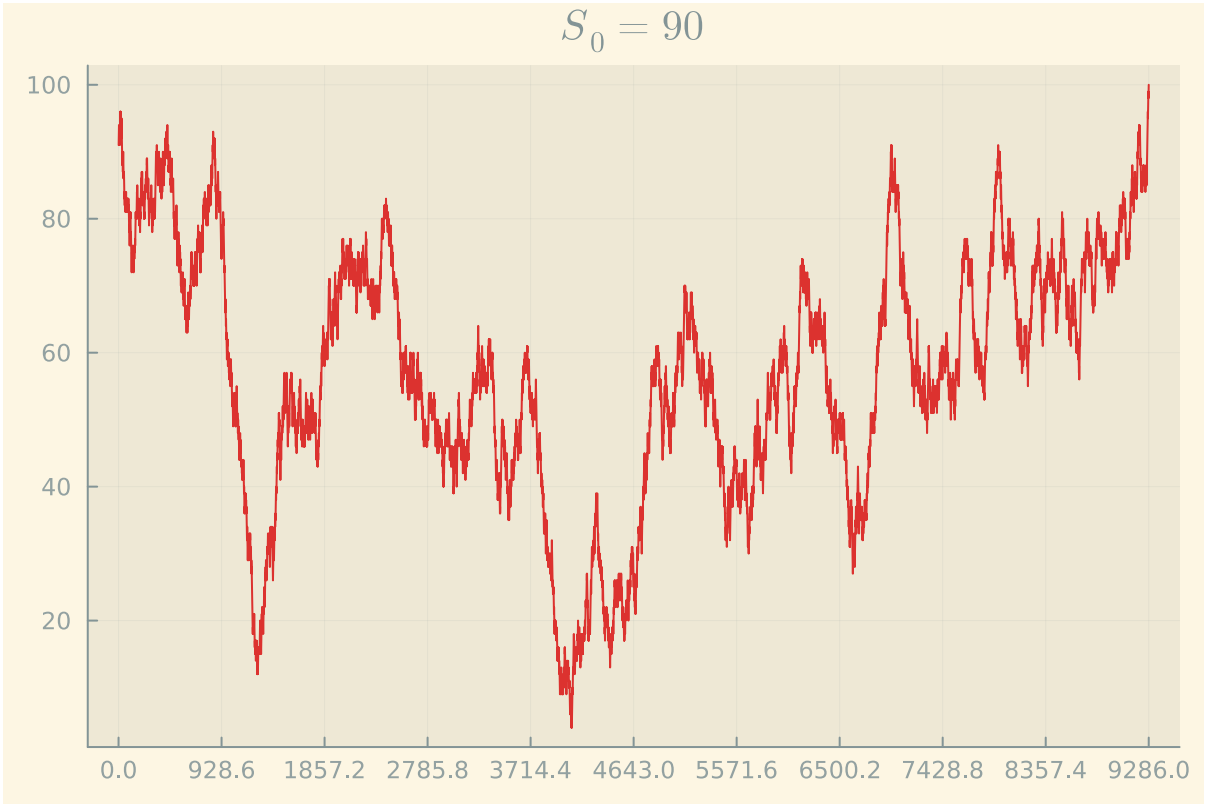

$S_0 = 70$
60
40
20
0
0.0
314.4
628.8
943.2
1257.6
1572.0
1886.4
2200.8
2515.2
2829.6
3144.0

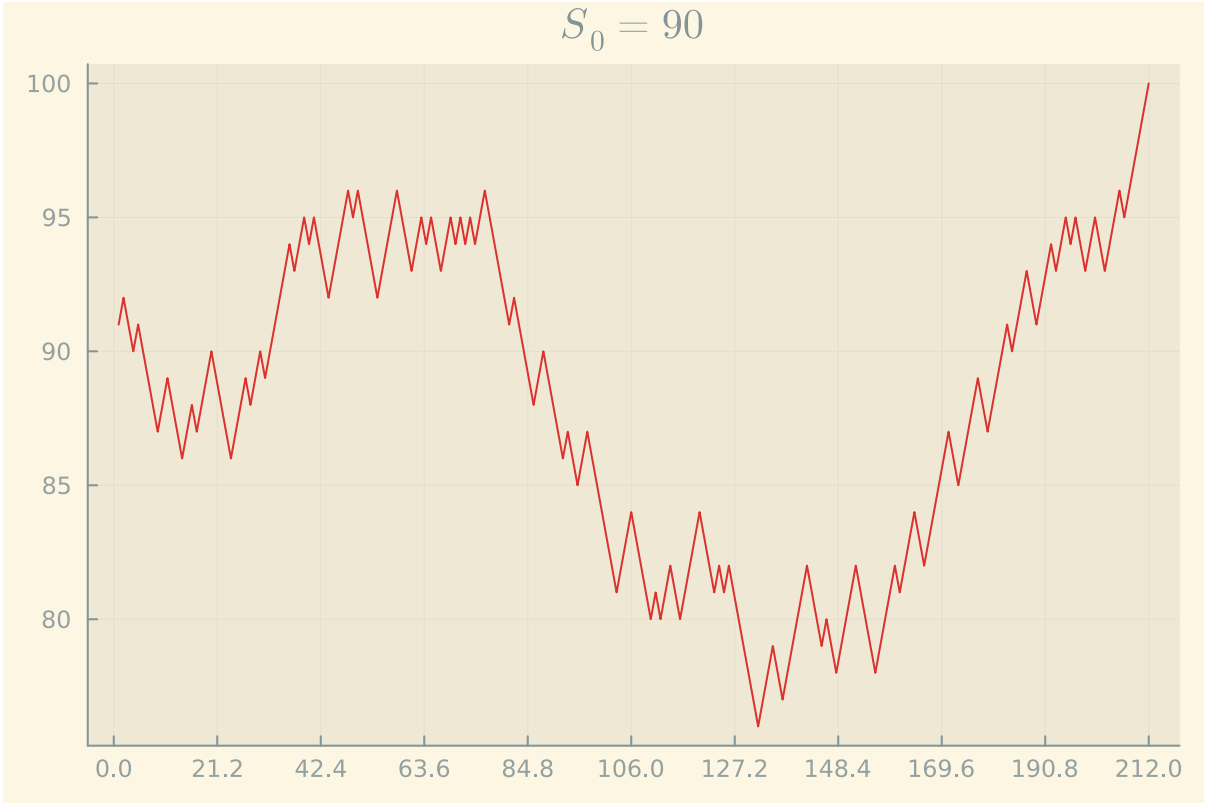

$S_0 = 70$
100
90
80
70
0.0
49.4
98.8
148.2
197.6
247.0
296.4
345.8
395.2
444.6
494.0

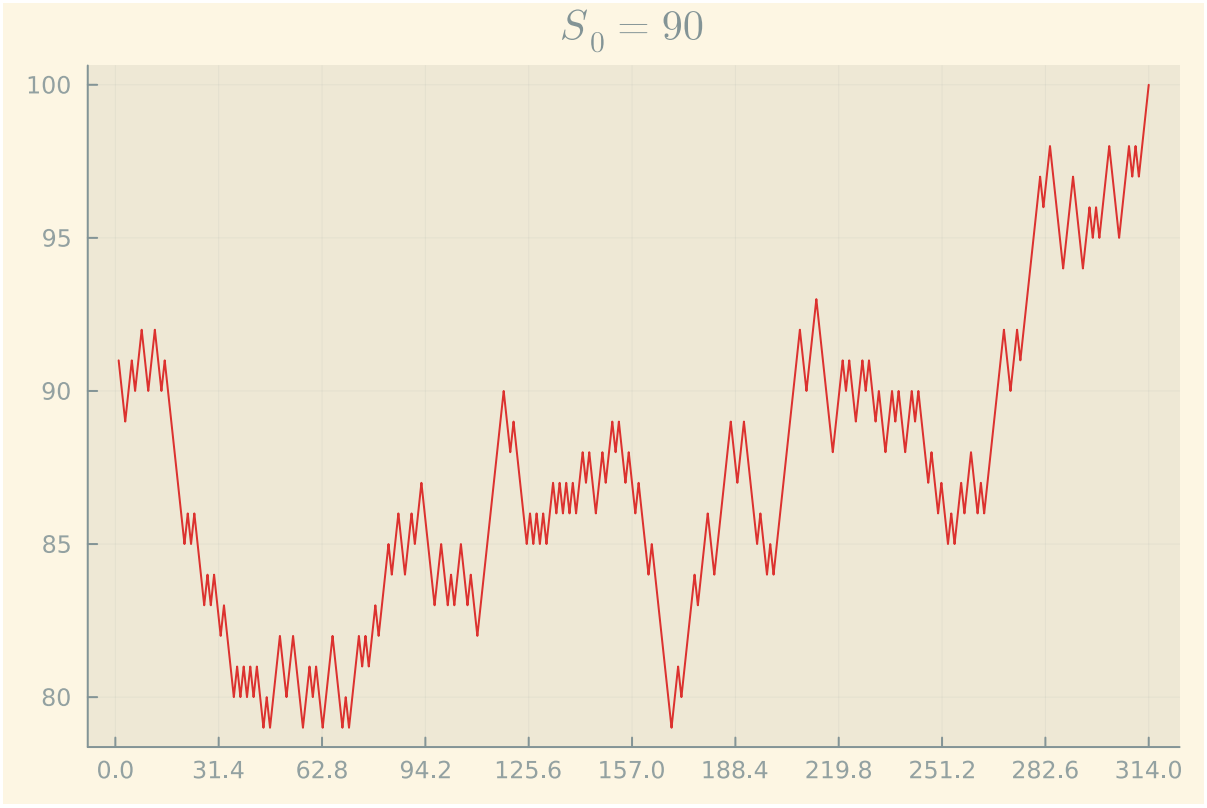

$S_0 = 70$
100
80
60
40
0.0
386.2
772.4
1158.6
1544.8
1931.0
2317.2
2703.4
3089.6
3475.8
3862.0

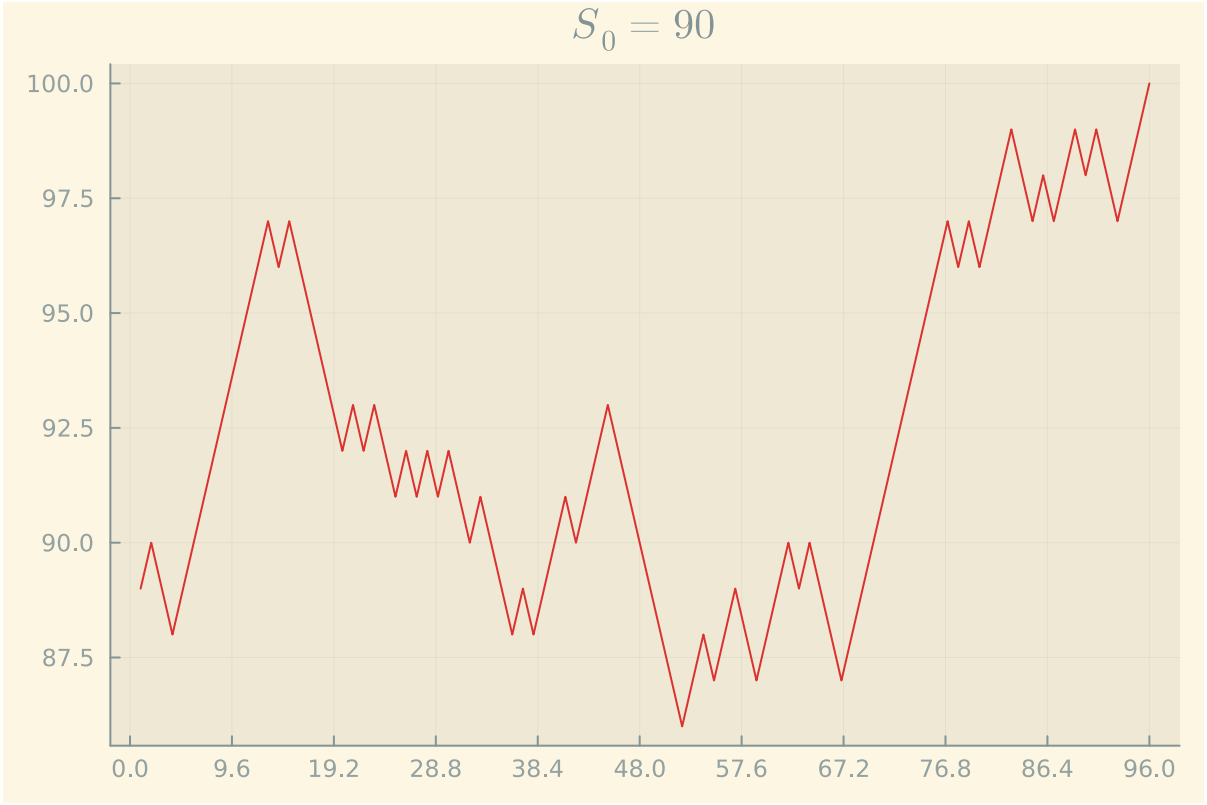

$S_0 = 70$
80
60
40
20
0
0.0
402.8
805.6
1208.4
1611.2
2014.0
2416.8
2819.6
3222.4
3625.2
4028.0

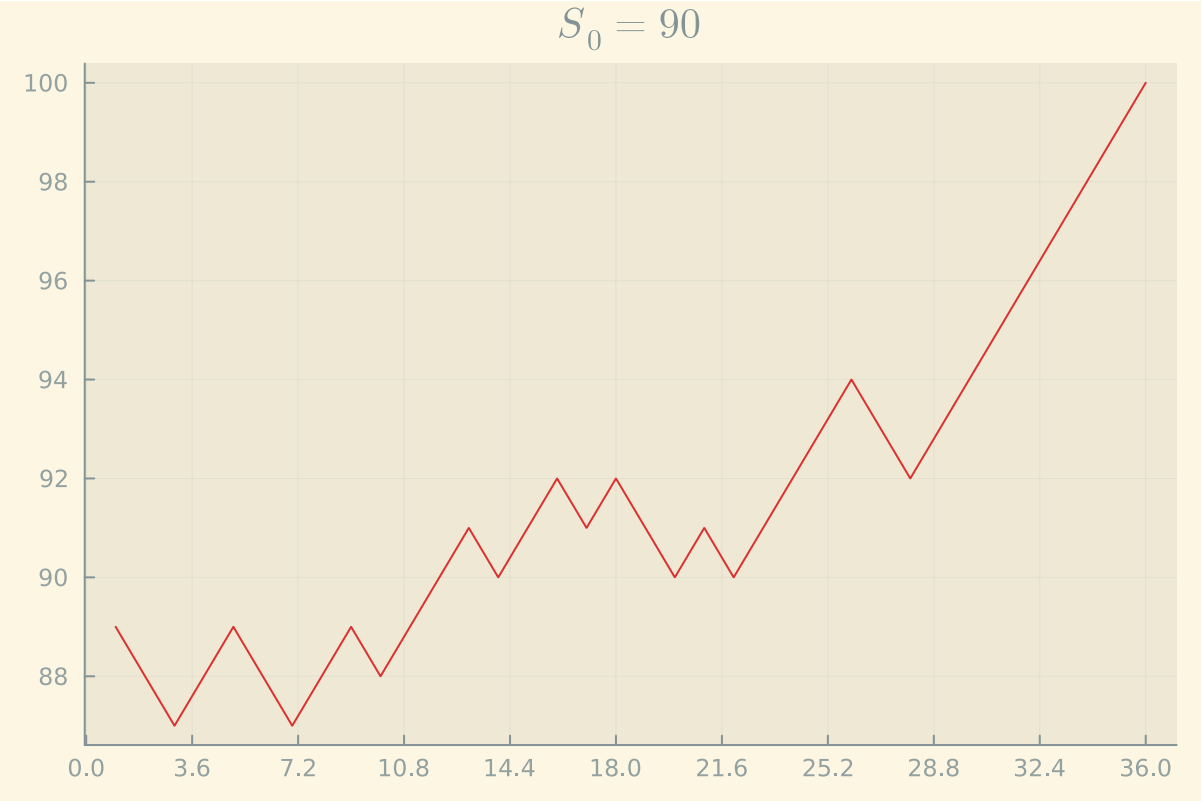

$S_0 = 70$
80
60
40
20
0
0.0
598.4
1196.8
1795.2
2393.6
2992.0
3590.4
4188.8
4787.2
5385.6
5984.0

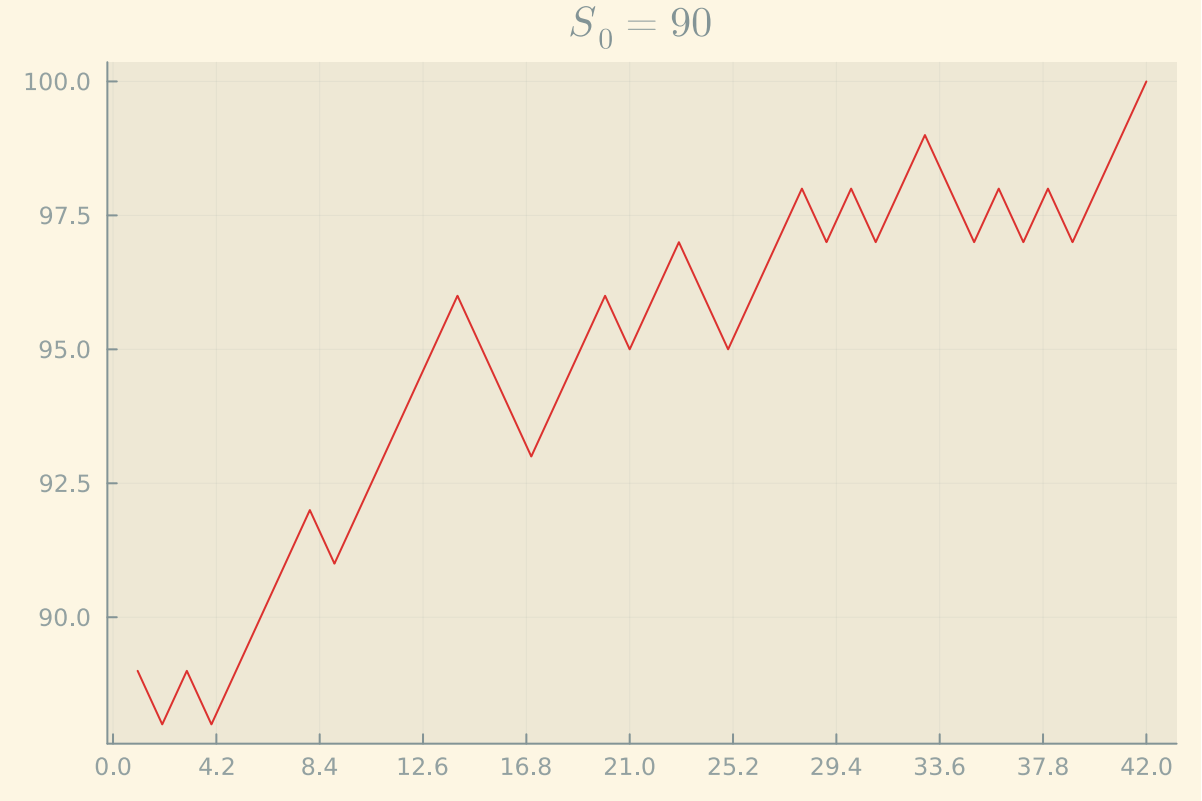

$S_0 = 90$
100
80
60
40
20
0.0
928.6
1857.2
2785.8
3714.4
4643.0
5571.6
6500.2
7428.8
8357.4
9286.0

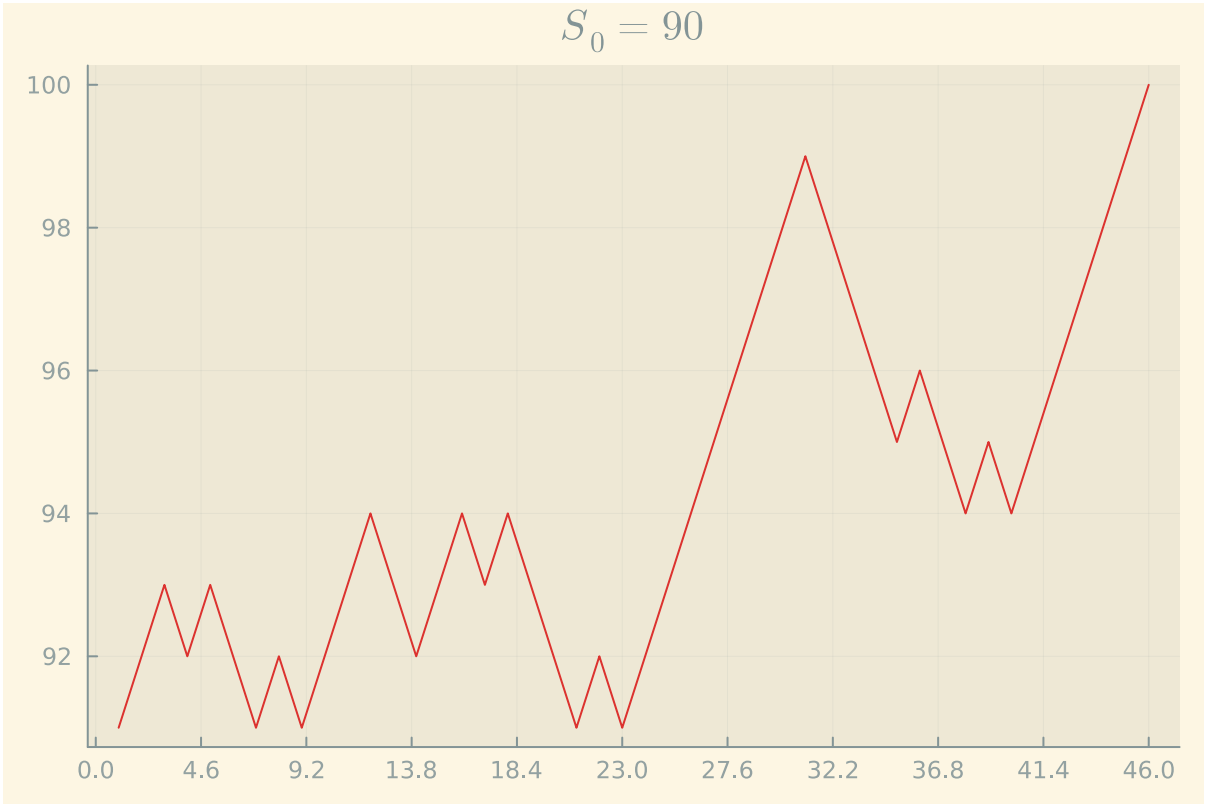

$S_0 = 90$
100
95
90
85
80
0.0
21.2
42.4
63.6
84.8
106.0
127.2
148.4
169.6
190.8
212.0

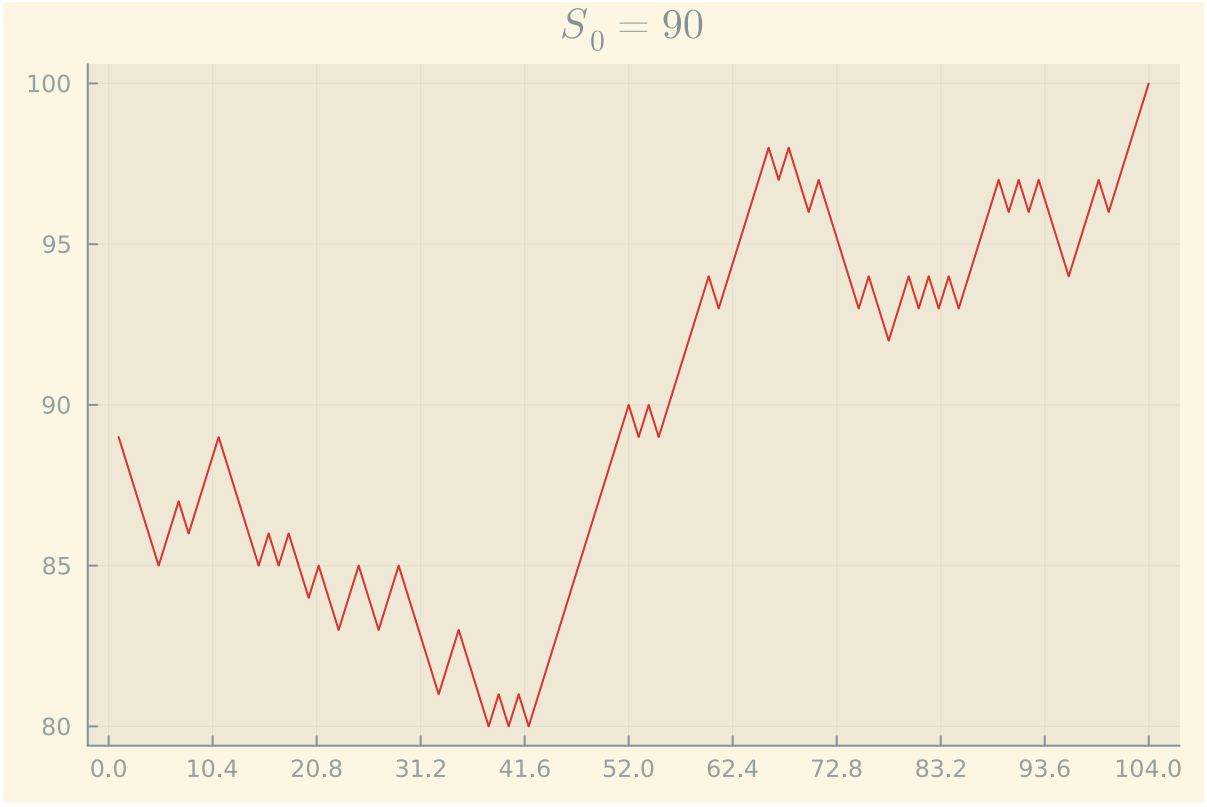

$S_0 = 90$
100
95
90
85
80
0.0
31.4
62.8
94.2
125.6
157.0
188.4
219.8
251.2
282.6
314.0

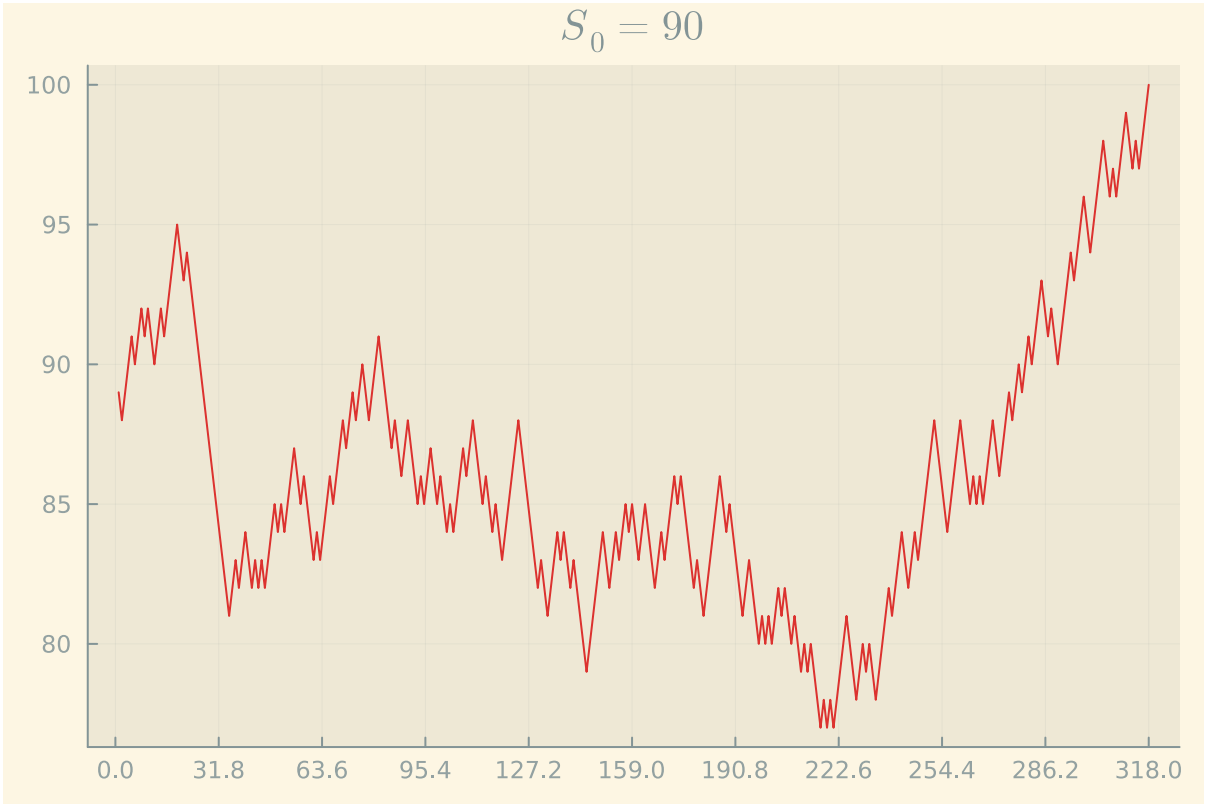

$S_0 = 90$
100.0
97.5
95.0
92.5
90.0
87.5
0.0
9.6
19.2
28.8
38.4
48.0
57.6
67.2
76.8
86.4
96.0

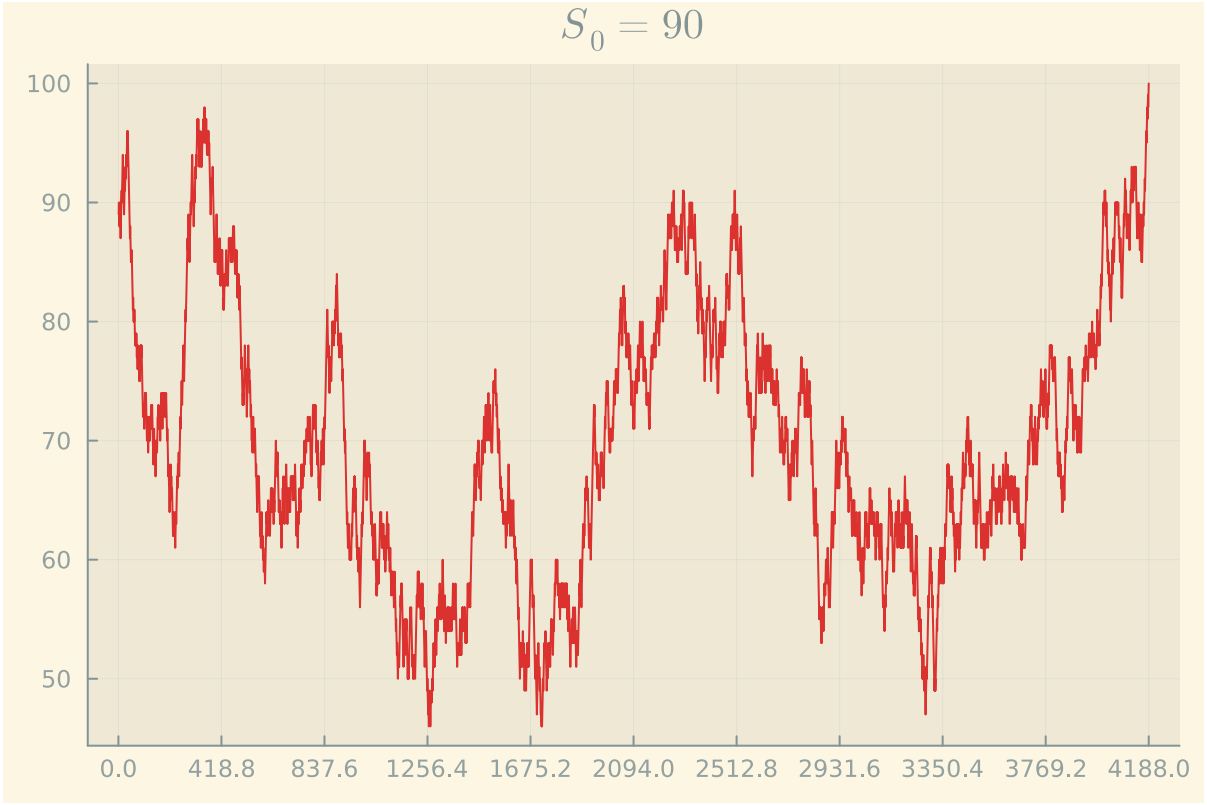

$S_0 = 90$
100
98
96
94
92
90
88
0.0
3.6
7.2
10.8
14.4
18.0
21.6
25.2
28.8
32.4
36.0

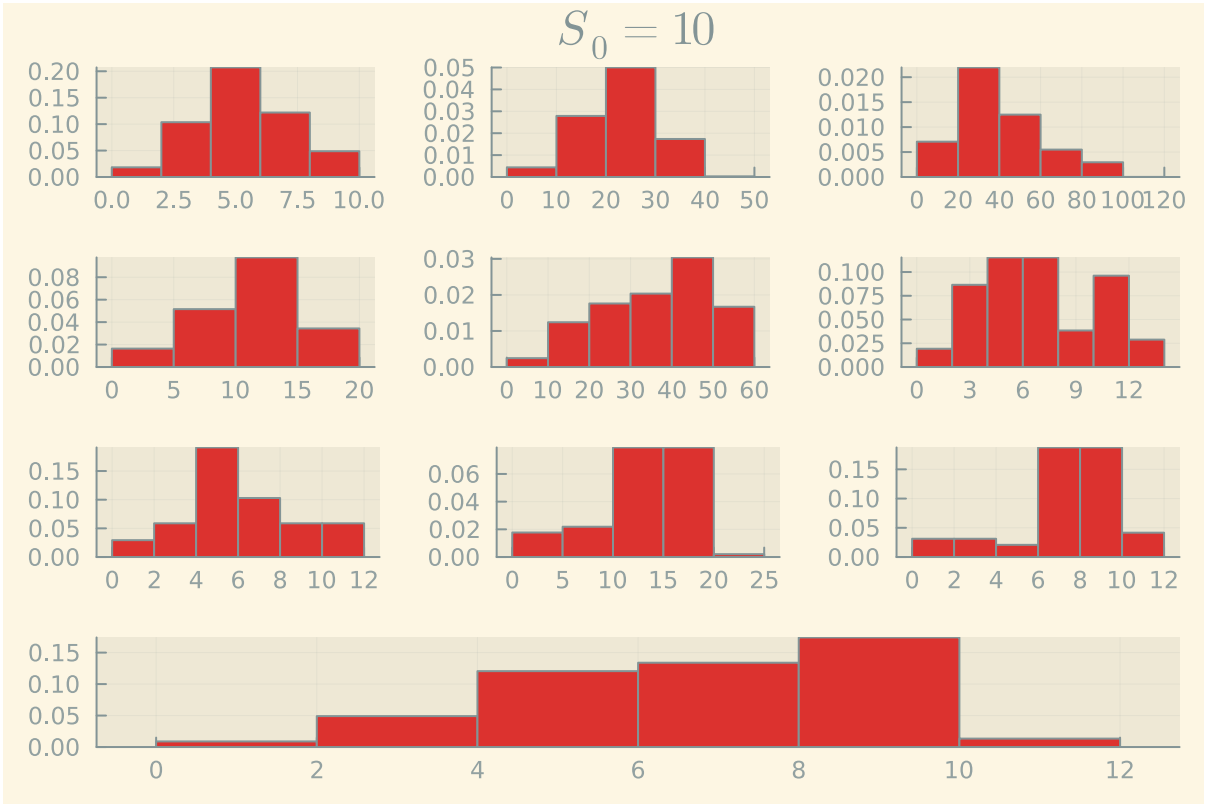

$S_0 = 90$
100.0
97.5
95.0
92.5
90.0
0.0
4.2
8.4
12.6
16.8
21.0
25.2
29.4
33.6
37.8
42.0

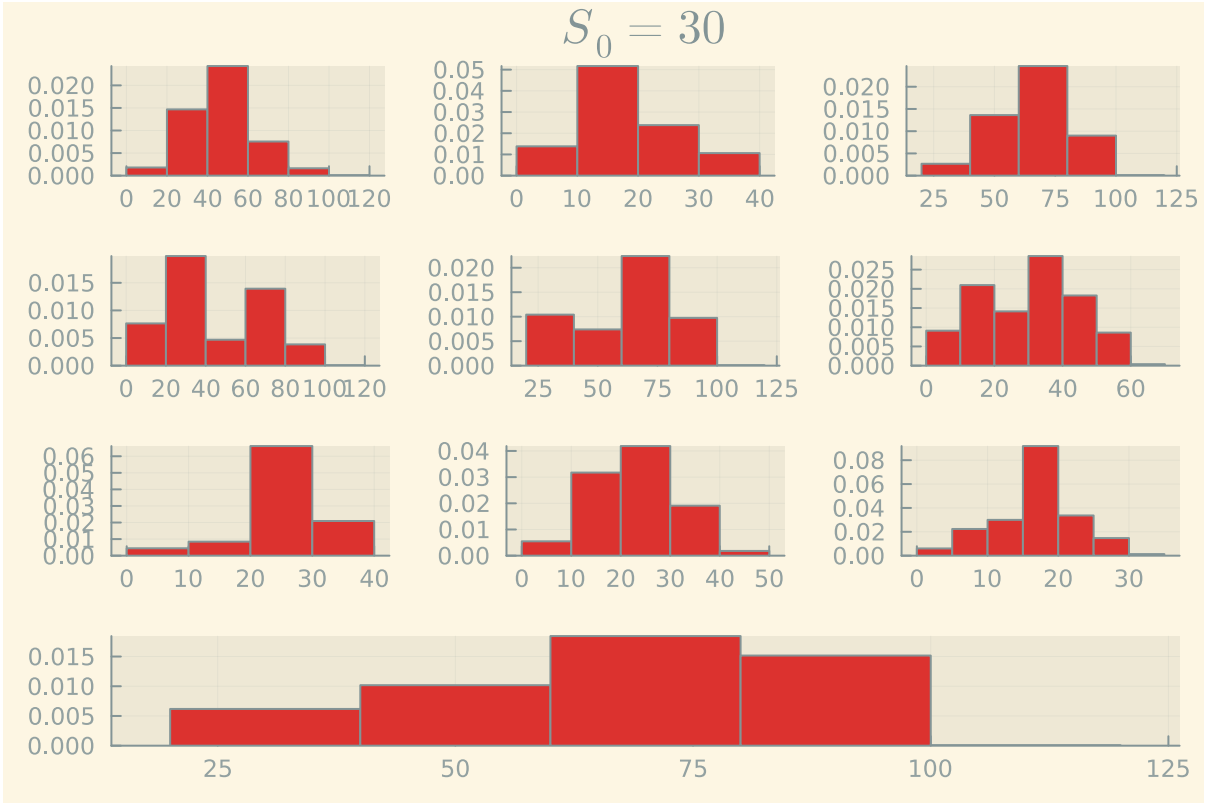

$S_0 = 90$
100
98
96
94
92
0.0
4.6
9.2
13.8
18.4
23.0
27.6
32.2
36.8
41.4
46.0

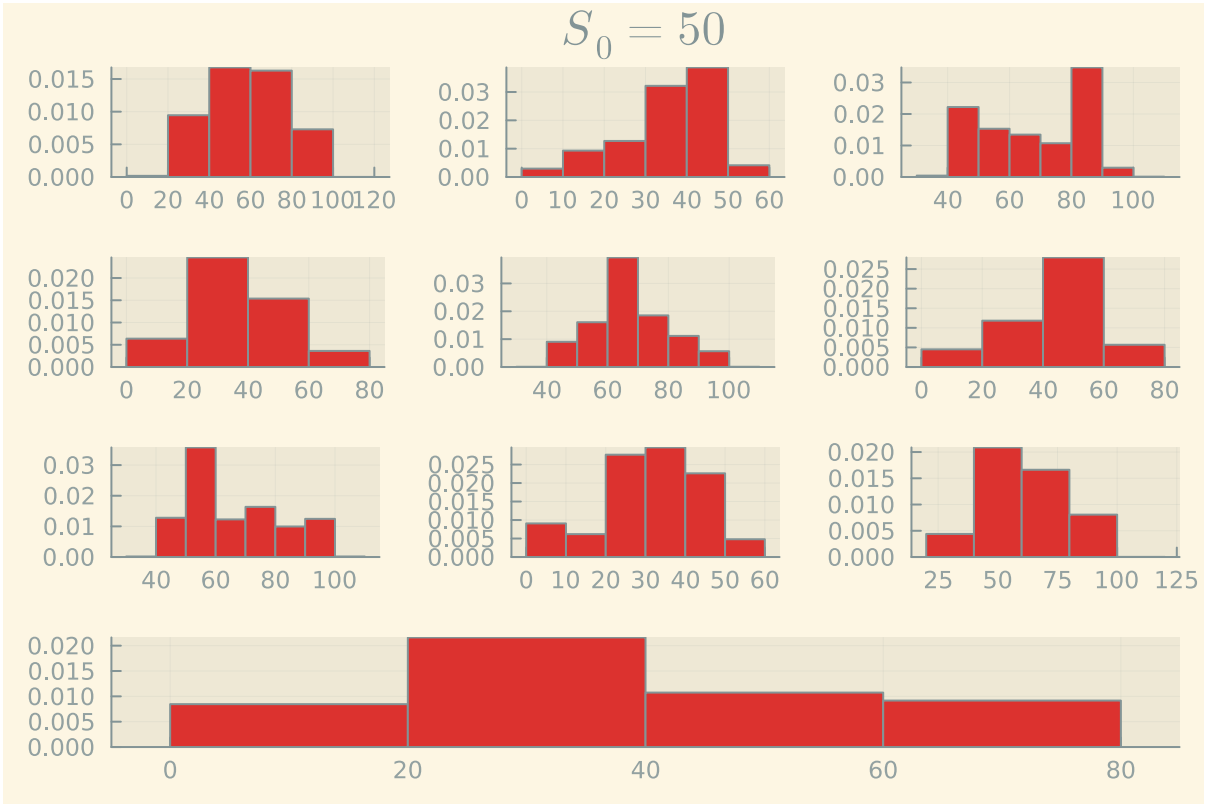

$S_0 = 90$
100
95
90
85
80
0.0
10.4
20.8
31.2
41.6
52.0
62.4
72.8
83.2
93.6
104.0

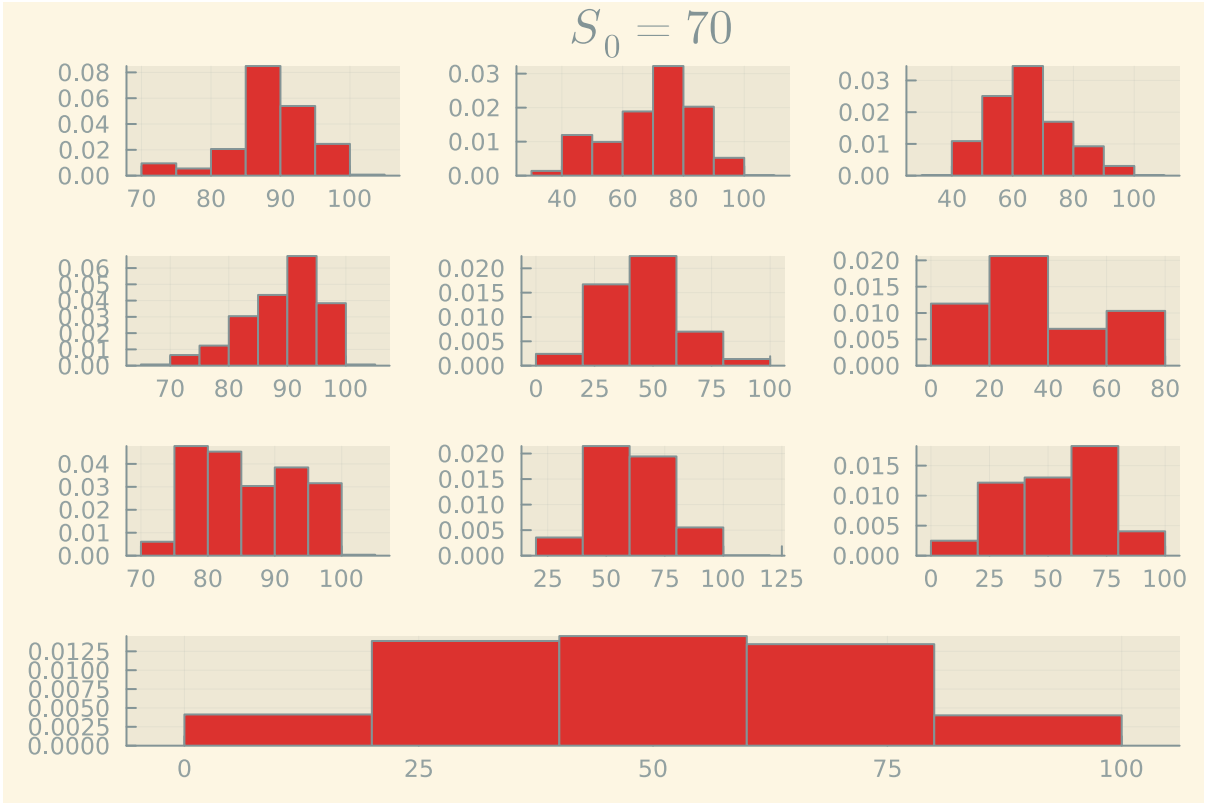

$S_0 = 90$
100
95
90
85
80
0.0
31.8
63.6
95.4
127.2
159.0
190.8
222.6
254.4
286.2
318.0

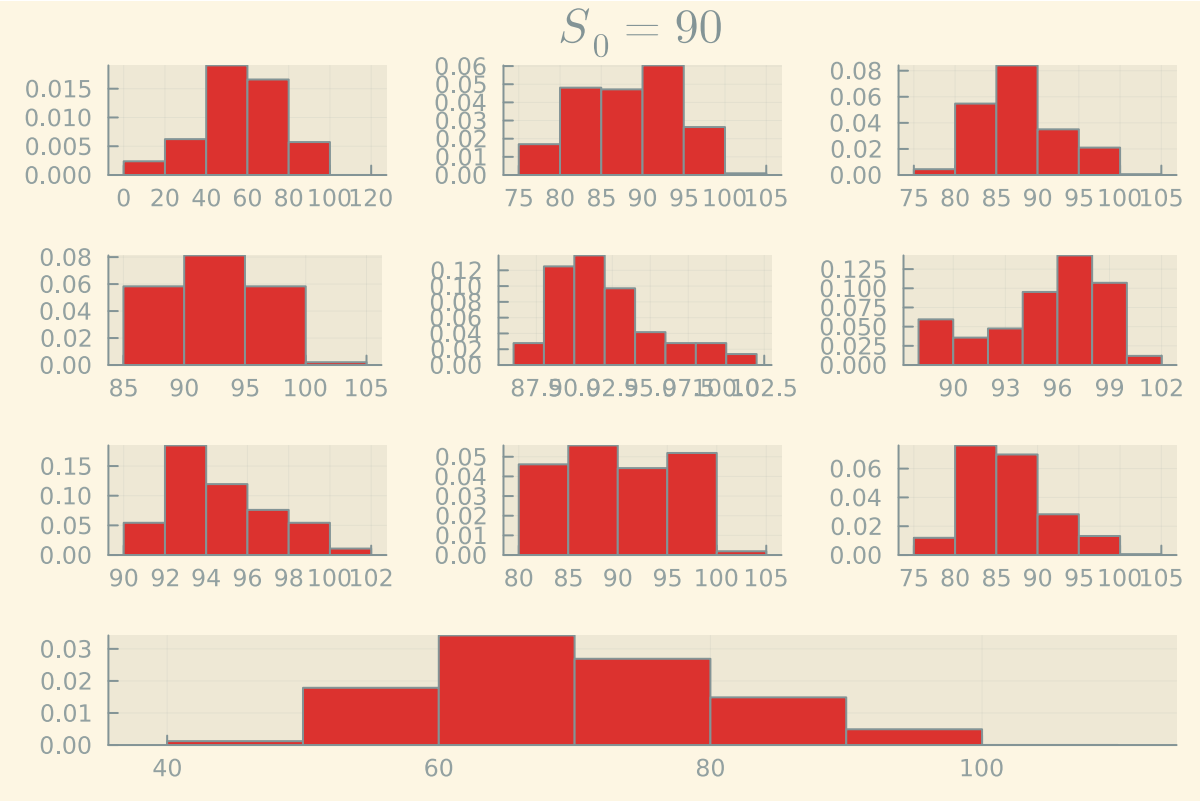

$S_0 = 90$
100
90
80
70
60
50
0.0
418.8
837.6
1256.4
1675.2
2094.0
2512.8
2931.6
3350.4
3769.2
4188.0


$S_0 = 10$


$S_0 = 30$


$S_0 = 50$


$S_0 = 70$




```
S0 = 10
Esperança: 900
Média dos passeios: 9558.0
Variância amostral dos passeios: 2.0442324000000001e6

S0 = 30
Esperança: 2100
Média dos passeios: 13020.0
Variância amostral dos passeios: 294507.55555555556

S0 = 50
Esperança: 2500
Média dos passeios: 18748.0
Variância amostral dos passeios: 1.0811503999999997e6

S0 = 70
Esperança: 2100
Média dos passeios: 27772.0
Variância amostral dos passeios: 6.205761955555556e6

S0 = 90
Esperança: 900
Média dos passeios: 14642.0
Variância amostral dos passeios: 9.177799511111112e6
```

```
function muitospasseios()
    dfvarios = DataFrame(
        :Caminho => Array[],
        :Tamanho => Int64[]
    )
    for i in 0:4
        for j in 0:10000
            caminhada = passeio(i*10000+j, 10+20*i, 100)
            push!(dfvarios, (caminhada, length(caminhada)))
        end
    end

    medias = []
    variancias = []
    for i in 0:4
        vals = []
        somamedias = 0
        for j in 1:10000
            somamedias += dfvarios.:Tamanho[j+10000*i]
            append!(vals, dfvarios.:Tamanho[j+10000*i])
        end
        append!(medias, mean(somamedias))
        append!(variancias, var(vals))
    end

    for i in 0:4
        szero = 10+20*i
        println("S0 = $szero")
        println("Esperança: $(szero*(100-szero))")
        println("Média dos passeios: $(medias[i+1])")
        println("Variância amostral dos passeios: $(variancias[i+1])\n")
    end
end
muitospasseios()
```

```
S0 = 10
Esperança: 900
Média dos passeios: 9.051292e6
Variância amostral dos passeios: 2.415284898997259e6

S0 = 30
Esperança: 2100
Média dos passeios: 2.0732344e7
Variância amostral dos passeios: 3.928091088565497e6

S0 = 50
Esperança: 2500
Média dos passeios: 2.4852862e7
Variância amostral dos passeios: 4.096990001089669e6

S0 = 70
```

```
Esperança: 2100
Média dos passeios: 2.1087432e7
Variância amostral dos passeios: 4.213121993453104e6

S0 = 90
Esperança: 900
Média dos passeios: 9.059926e6
Variância amostral dos passeios: 2.5165539669419355e6
```