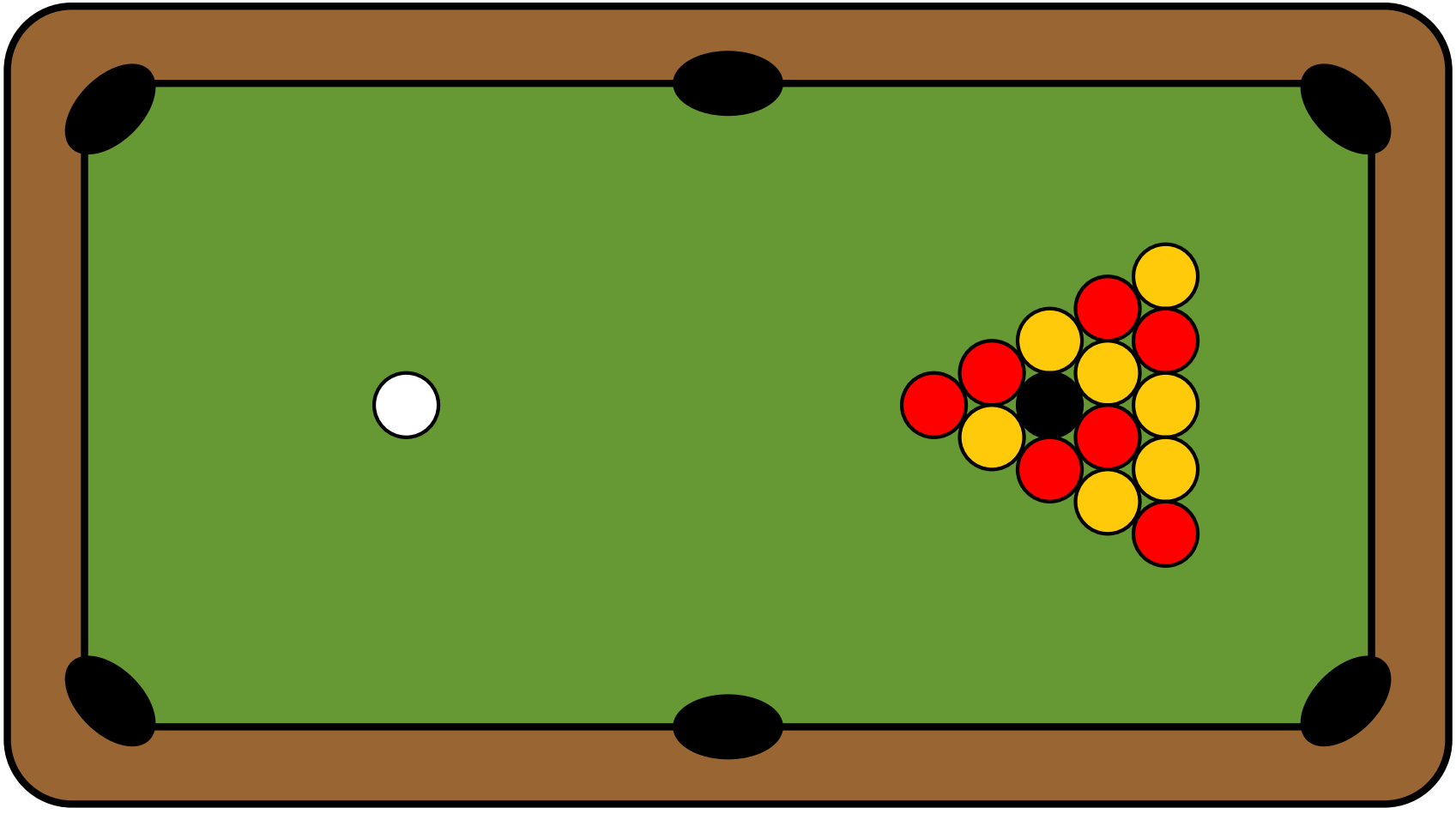
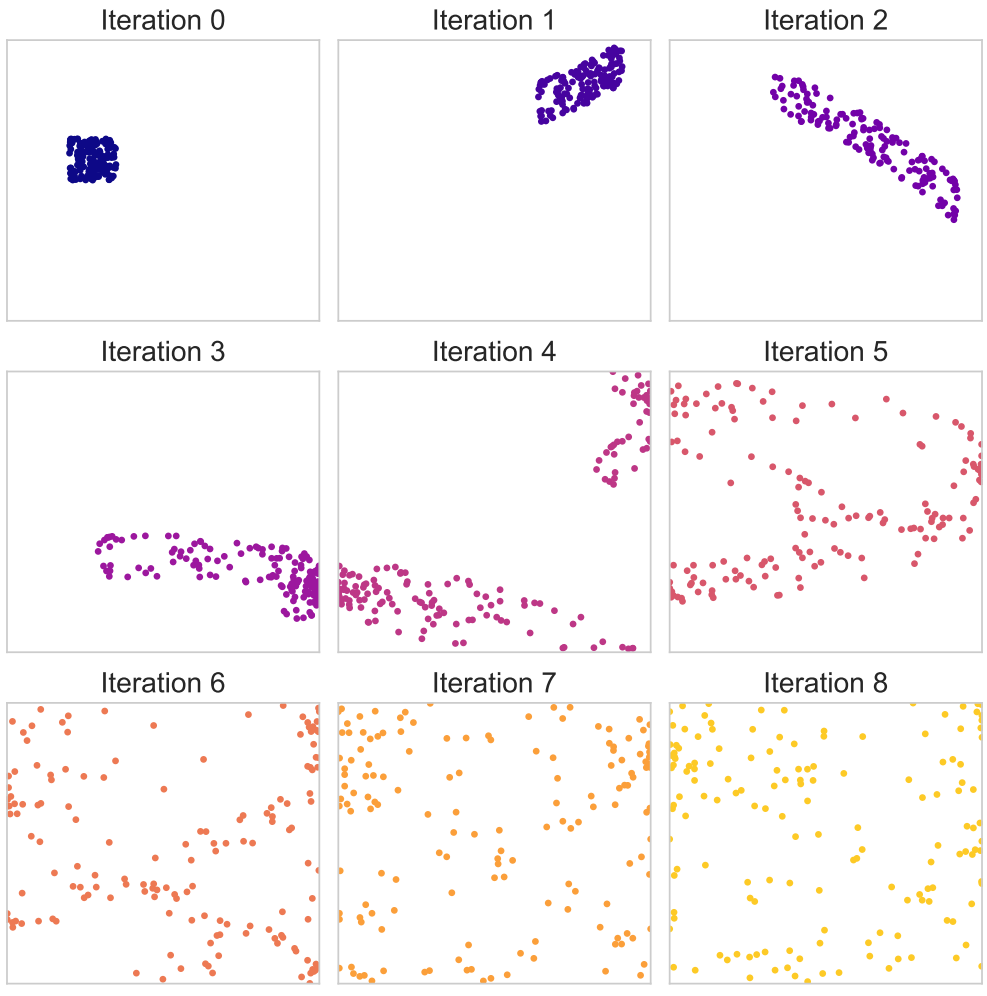
Snooker, Smoking, and Floating Point Number Arithmetic

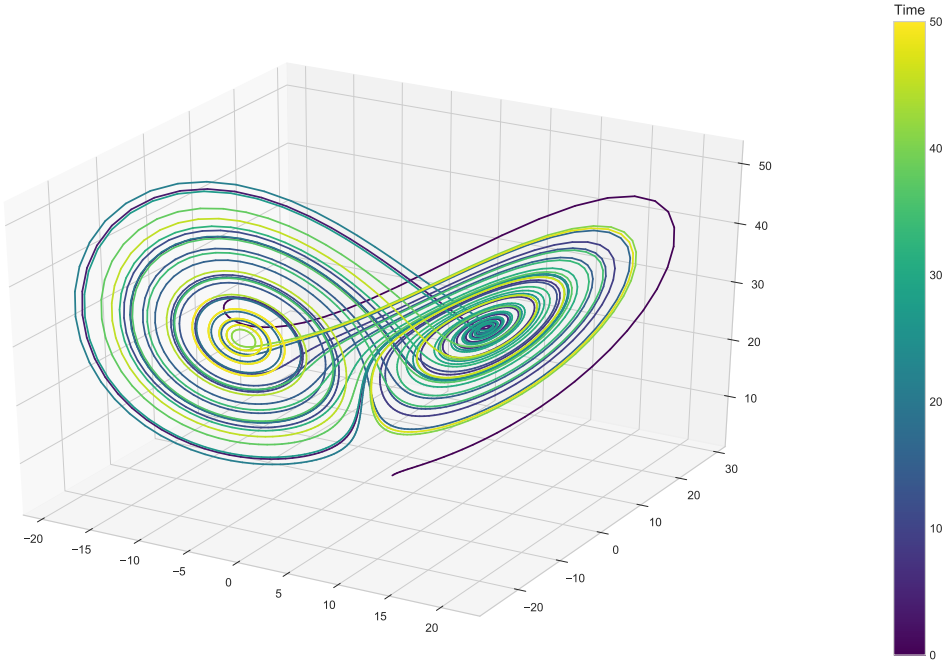
Geraint Palmer

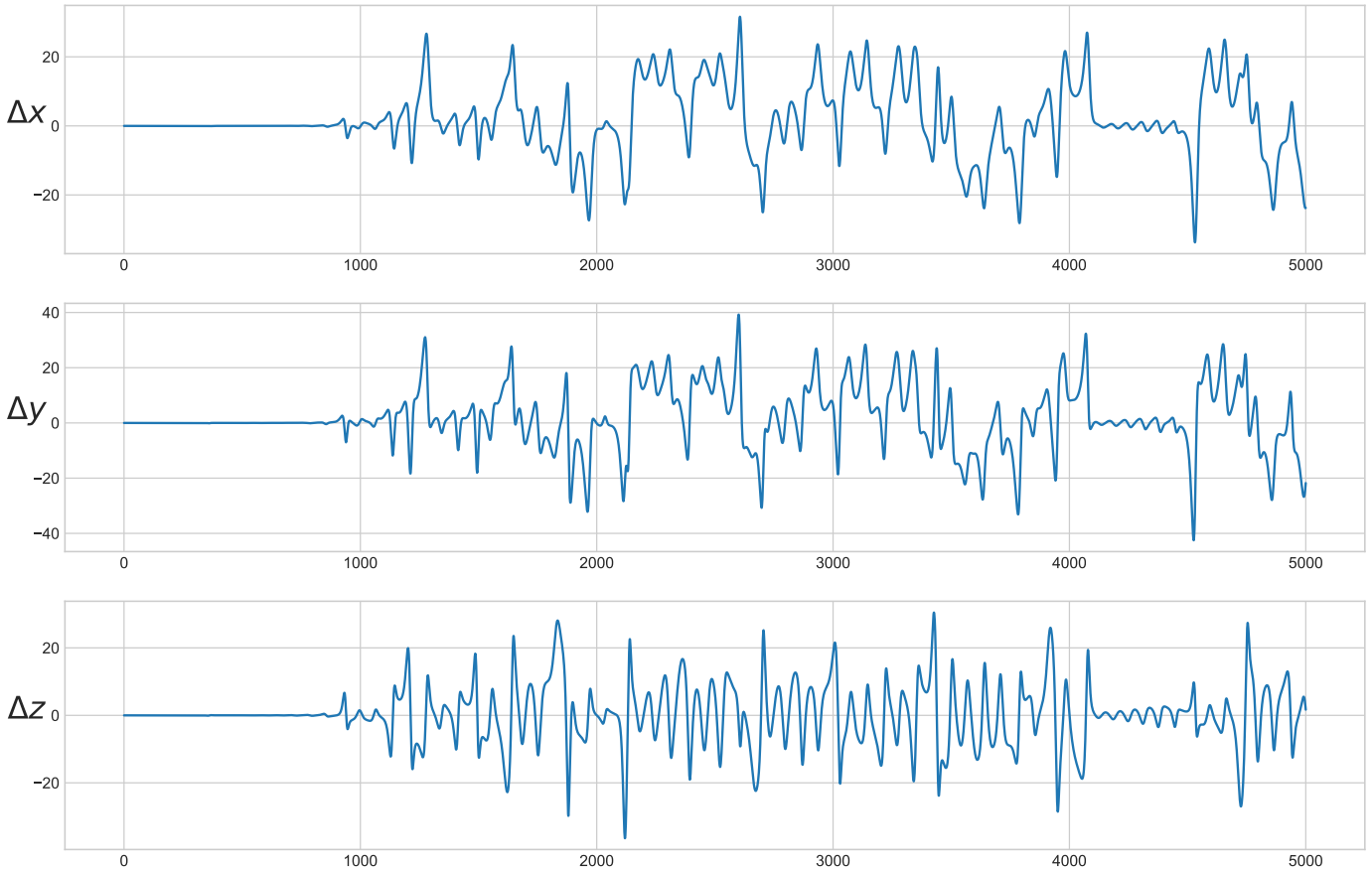


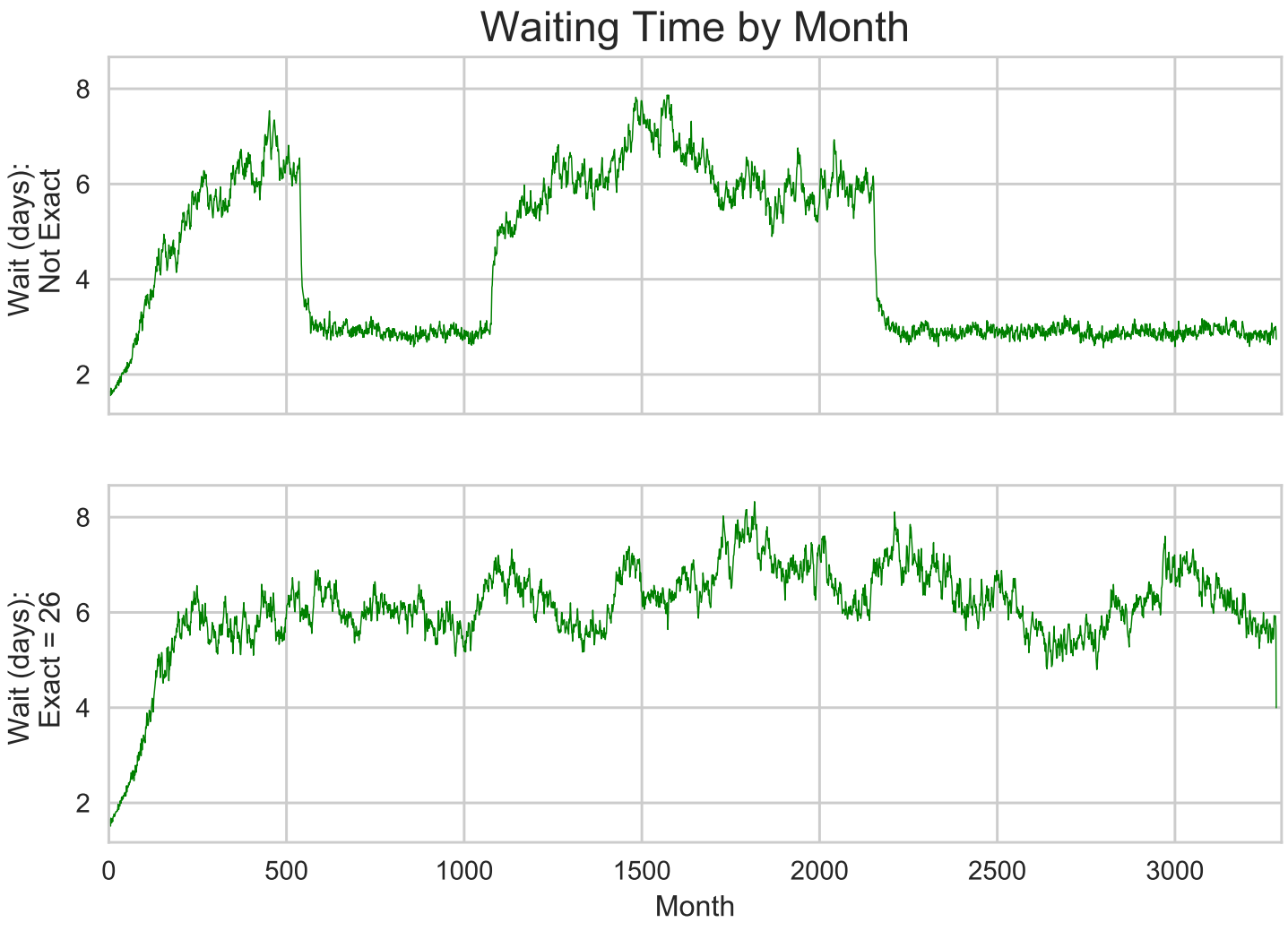
$$x_{k+1} = 4x_k(1 - x_k)$$
$$y_{k+1} = x_k + y_k \mod 1$$



$$\frac{dx}{dt} = 10(y - x)$$
$$\frac{dy}{dt} = x(28 - z) - y$$
$$\frac{dz}{dt} = xy = \frac{8}{3}z$$




Δx
20
0
−20
0
1000
2000
3000
4000
5000
Δy
40
20
0
−20
−40
0
1000
2000
3000
4000
5000
Δz
20
0
−20
0
1000
2000
3000
4000
5000


Waiting Time by Month
Wait (days): Not Exact
8
6
4
2
Wait (days): Exact = 26
8
6
4
2
0
500
1000
1500
2000
2500
3000
Month

```
>>> 0.1 + 0.2
0.30000000000000004
```