\[ \phi_{n+1} = (\phi_n + \psi_{n+1}) \mod 2\pi \]

\[ \psi_{n+1} = 5 \sin \phi_n + \psi_n \]

This map is known as the standard map

\[ (\phi_{n+1}, \psi_{n+1}) = 2\pi \cdot (\phi_n, \psi_n) \]

Some properties:

- \[ Z \in (\phi + 2\pi, \phi) = Z \in (\phi, \phi) \]

- The map does not change if we add \(2\pi\) to all \(\psi_n\)

Therefore we have to consider only initial conditions in

\[ \psi \in (-\pi, \pi) \]
\[ \phi \in (0, 2\pi) \]

Fixed points

\[ \phi = (\phi + \pi) \mod 2\pi \]
\[ \psi = 5\sin \phi + \pi \]

\[ \phi = \pi, 7\pi \]
\[ \psi = 0 \]

map for \(\Sigma = 0\)

\[ \phi_{n+1} = (\phi_n + \psi_{n+1}) \mod 2\pi \]
\[ \psi_{n+1} = \psi_n \]

\[ \phi \quad \psi \]
\[ 0 \quad 2\pi \]