Exercise 4 – Stochastic and population methods

The test function for this exercise will be the Ackley function (you can find the MATLAB implementation in folder for the last seminar).
Your job is to program four methods for optimization of the Ackley function, namely:

- Mesh adaptive direct search, with ε =1e-6.
- Cross-entropy method, starting with multivariate normal distribution $\mathcal{N}(x^{(0)}, 10 \cdot I)$, $m = 40$, $m_{\text{elite}} = 10$.
- Differential evolution, with population size 10, initial population sampled around $x^{(0)}$, $p = 0.9$, $w = 0.8$.
- Particle swarm optimization, with population size 10, initial population sampled around $x^{(0)}$, $w = 0.9$, $c_1 = 1.2$, $c_2 = 1.2$.

As the starting point set $x^{(0)} = [-6, -4.5]^T$ and set the termination criteria (apart from the ones present in the methods) as both maximum number of iterations (max 100) and maximum function calls (max 1000). Visualize the iterations.