1. Recall that a symplectic isotopy (ϕ_t) is *Hamiltonian* if the vector field $(X_t)_{\phi_t(p)} := \frac{d}{dt}|_{s=0}\phi_{t+s}(p)$ is Hamiltonian. If $H^1(M;\mathbb{R}) = 0$, prove that every symplectic isotopy is Hamiltonian.

2. Consider the polytope $P \subset \mathbb{R}^2$ with vertices $(0,0), (2,0), (1,1), (0,1)$. Construct a symplectic toric variety $M = (M, \omega)$ with a moment map $\mu : M \to \mathbb{R}^2$ such that $im(\mu) = P$. *Bonus: can you work out the diffeomorphism type of this manifold? (feel free to consult textbooks).*

3. Write down examples of Delzant and non-Delzant rational polytopes.

4. Let M be a symplectic manifold. Verify that the diagonal

$$\Delta := \{(x, x) \in M \times M^-\} \subset (M \times M^-, \omega \oplus -\omega)$$

is Lagrangian.