Homework "Algebraic Topology" - Due 21.11.2018

1. Give a CW structure, compute all homology groups with integer coefficients and compute the Euler characteristic of the following topological spaces:

   (a) A sphere $\mathbb{S}^2$ in which all points on its equator $\mathbb{S}^1$ are identified antipodally.

   (b) $\mathbb{S}^1 \times (\mathbb{S}^1 \vee \mathbb{S}^1)$, where $\vee$ is the wedge sum (given two topological spaces X, Y with preferred basepoints $x_0 \in X$, $y_0 \in Y$, the wedge sum of X and Y is $X \vee Y := X \coprod Y / x_0 \sim y_0$).

Please include pictures in your solutions!!