TOPOLOGY 2, HOMEWORK 8
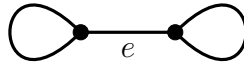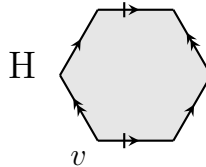
(1) Explicitly describe a homotopy inverse for the quotient map $X \to X/A \approx \mathbb{S}^1 \vee \mathbb{S}^1$, where X is the graph below and A is the union of the edge e and the two vertices.

(2) Let Y be the the quotient of the hexagon H by the edge pairings indicated below.

(a) Compute $\pi_1(Y, [v])$, for the pictured vertex v of H.
(b) Let $A = p(\partial H)$, where ∂H is the union of edges of H and $p \colon H \to Y$ is the quotient map. Does Y retract to A?

(3) Hatcher, Section 1.2 #18(a)

Here the *suspension* of a space X is the quotient of $X \times I$ by setting $(x, 0) \sim (y, 0)$ and $(x, 1) \sim (y, 1)$ for all x and y in X. See Hatcher, Ch. 0.

(4) Hatcher, Section 1.2 #20