Exercises:

1. Verify that the diagram (37.5) commutes.
2. Determine $H_n(X, A)$ when $A = \emptyset$, and when A is a singleton and $n \geq 1$. What happens if $n = 0$?
3. Compute $H_n((S^1 \times S^1)/(S^1 \vee S^1))$ and compare it with the absolute homology $H_n((S^1 \times S^1)/(S^1 \vee S^1))$.
4. Compute $H_k(E^n/S^{n-1})$ and compare it with $H_k(E^n, S^{n-1})$.
5. In example (35.1), prove that X/A is homeomorphic to $\mathbb{R}P^2$. Compare the groups $H_n(X, A)$ with the groups $H_{n+1}(X, A)$. Hint: To set up the homeomorphism note that $(x, y) \mapsto (x\sqrt{1-y^2}, y)$ maps each $[-1, 1] \times \{y\}$homeomorphically onto the chord at height y.