Differential Topology

10th Problem Set
Due Dey 20th, 1397

- Problems 6.3, 6.4, 7.1, 7.2, 7.4 and 7.5 page 250 from [M&T].
- Consider the following subsets of $\mathbb{R}^{m+n+1}$ $(m, n \geq 1)$,

$$S_1 = \big\{(x_0, x_1, \ldots, x_m, \underbrace{0, \ldots, 0}_{n}) : x_0^2 + x_1^2 + \cdots + x_m^2 = 1\big\},$$

$$S_2 = \big\{(x_0, \underbrace{0, \ldots, 0}_{m}, x_{m+1}, \ldots, x_{m+n}) : (x_0 - 1)^2 + x_{m+1}^2 + \cdots + x_{m+n}^2 = 1\big\}.$$

Compute $H^p\big(\mathbb{R}^{m+n+1} \setminus (S_1 \cup S_2)\big)$ for all $p \geq 0$.

References

[M&T] Madsen, I., Tornehave, J., *From calculus to cohomology*, Cambridge University Press.

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