

Name: \_\_\_\_\_ Score (Out of 5 points):

1. (5 points) Let  $Y \cong S^n$  be a smooth  $n$ -sphere, and let  $X \subseteq Y$  be a smoothly embedded  $d$ -sphere, for some  $0 \leq d < n$ . Compute the reduced homology groups of the quotient space  $Y/X$ .

Note: The tubular neighbourhood theorem from differential topology implies that  $(Y, X)$  is a good pair.