There were 13 scripts. All scripts were marked out of 80 (not out of 100) and only three questions were marked. Before scaling (which I will not be told about) the lowest and highest marks were 22 and 73 respectively. The median was 59 and the mean was 56.

1a: Several students claimed that a single composition rule satisfies associativity. This does not make sense. Rather, associativity is a property satisfied by two compositions (that share two objects in the correct fashion).

1d: A few students called the second axiom for functors the "associativity axiom". This is not a good name. (Perhaps "distributivity over composition" would be a better name.)

1g: A few students claimed that $\mathcal{L}$ is a functor. This is true, but the proof requires parts (h) and (i). No points were deducted for this.

2a: Note that a CW–structure on a space is a collection of cells *and* attaching maps. Several students had trouble discussing the CW structure on $\mathbb{CP}^3$. The worst offenders here had a discussion (using one notation) followed by a copy of Hatcher's remarks in Example 0.6 (which uses a different notation).

2e: For complex projective space you are allowed to simply point at the theorem from lecture for the cohomology ring; an honest proof of this is far more than four marks!

3d: To show that ω is not a coboundary, we must show that it is not the coboundary of *any* $\zeta \in Z^0(S^1; \mathbb{R})$.

3e: We are told that $z \in Z_1(S^1)$ is a cycle. We cannot deduce that z is a singular one-simplex. In particular, taking a "lift" of z makes no sense.

4c: When using the universal coefficient theorem we must remember to check that the Ext groups vanish.

4d: A few students avoided the direct computations in parts (c) and (d) by

- i) noticing that $X \cong S^2 \times R$ where R is a graph with one vertex and two edges and
- ii) applying the Künneth formula.

5: Few students attempted this problem.