

HOMOLOGICAL ALGEBRA, FALL 2025
PROBLEM SHEET 12

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Problem 1 (10, total complex). Compute the full total complex for Example 161.

Problem 2 (20*, well-definedness of the spectral sequence of a double complex). Prove that the differentials constructed in §V.1 are well-defined, see Exercise 162.

Problem 3 (20, page 2 differentials). Solve Exercise [Wei94, 5.1.2]

Problem 4 (10, double complex with 2 columns). Solve Exercise [Wei94, 5.1.1]

REFERENCES

[Wei94] Charles A. Weibel. *An introduction to homological algebra*, volume 38 of *Cambridge Studies in Advanced Mathematics*. Cambridge University Press, Cambridge, 1994.

Date: Please hand in before the lecture on Friday, **December 12thth 2025**. For all exercises the results need to be proven using results from this lecture and the lectures before, provided you give a reference.