

## Physics 263: BTM Problem Set #15

These problems are from BTM Chapter 8, “Matrices and Determinants,” covering basic features of matrices applied to  $2 \times 2$  matrices that you’ll need know in general. Please ask questions! The problems are due at 5pm in the box in 1011 on Friday, May 19.

1. **BTM Problem 8.1.2.** Lorentz transformations revisited, this time in matrix form.
2. **BTM Problem 8.2.2.** Basic inverse applied to a case of interest: the two-dimensional rotation matrix.
3. **BTM Problems 8.2.3 and 8.2.5.** Two bread-and-butter matrix inverse problems involving solutions to simultaneous equations (or establishing that there aren’t solutions!).
4. **BTM Problem 8.2.7.** A basic property of matrix inverses you need to engrave on your brain.
5. **BONUS: BTM Problem 8.3.9.** The more general case of a Jacobian: when the coordinates are not orthogonal.