8.251 – Homework 10

B. Zwiebach Spring 2007

Due Friday, April 27.

1. (10 points) Problem 12.3.
2. (10 points) Problem 12.5.
3. (10 points) Problem 12.6.
4. (10 points) Problem 12.7.
5. (10 points) Problem 12.8.
6. (10 points) Problem 12.10.
7. (10 points) Problem 13.1.
8. (10 points) Problem 13.3.
9. (10 points) Problem 13.4. As part of (a) also prove that

$$L_0^\perp - \bar{L}_0^\perp = -\frac{p^+}{2\pi}\int_0^{2\pi} d\sigma\, \frac{\partial X^-}{\partial \sigma}\,,$$

   which explains that classically $L_0^\perp - \bar{L}_0^\perp$ vanishes because X^-, just like any other string coordinate, must satisfy the closed string periodicity condition. To do part (b) just use the result stated in Prob. 8.7.

10. (10 points) Problem 13.5.