

Mathematics 805  
Homework 9  
Due Friday, April 3, 1 PM

1. As before, let  $B_n(x)$  be the Bernoulli polynomial of degree  $n$ .
  - (a) Show that  $B_n(x+1) - B_n(x) = nx^{n-1}$ .
  - (b) By using part (a), derive a formula expressing

$$\sum_{j=1}^k j^r$$

in terms of  $B_{r+1}(x)$ .