

### 1 Mass Density

Consider a rod of length  $L$  lying on the  $z$ -axis. Find an algebraic expression for the mass density of the rod if the mass density at  $z = 0$  is  $\lambda_0$  and at  $z = L$  is  $7\lambda_0$  and you know that the mass density increases

- (a) like the square of the distance along the rod;
- (b) exponentially.