Assume that the population mean and variance are \( \mu \) and \( \sigma^2 \), respectively. Show that the following estimators for the population mean \( \mu \) are unbiased and compute the standard error for each.

a. 
\[ X_1 \]

b. 
\[ \bar{X} = \frac{1}{n} \sum_{i=1}^{n} X_i \]

c. 
\[ \frac{X_1 + X_2 + \ldots + X_{n+1}}{n+1} \]