MATH 134A Review: Expectation and Variance

1. Let $X$ be a random variable that takes value 1 with 100% probability. What is the expectation of $X$? What is the variance of $X$?

2. Let $X$ be a random variable that takes value $-1$ with 50% probability and value $+1$ with 50% probability. What is the expectation of $X$? What is the variance of $X$?

3. Let $X$ be a random variable that takes value 0 with 99% probability and value 100 with 1% probability. What is the expectation of $X$? What is the variance of $X$? **Hint** $(99)^2 = (100 - 1)^2 = 10000 - 200 + 1 = 9801$. 