4. A cereal packager is concerned that one of its machines has a mean fill per package of more than 16 ounces, the labeled net weight. While this is not bad from a public relations standpoint, it could cost the packager a great deal of money. Previous experience suggests that the standard deviation of the package fill weights is approximately 0.225. Suppose that you are interested in testing $H_0 : \mu = 16$ vs. $H_1 : \mu > 16$ and the following decision rule is to be used: Reject H_0 if the mean of a sample of 80 packages is greater than 16.05 ounces.

   (a) Find α for this decision rule.

   (b) Find the power for this decision rule if the true population mean is 16.10 ounces.

5. The number of misprints per page for a particular book may follow a Poisson distribution. To check whether the Poisson model is correct, an efficiency expert collects the following data from a sample of 100 pages:

Number of Mistakes per Page:	0	1	2	3	4	5	6
Frequency:	13	24	31	18	11	2	1

   Test at $\alpha = 0.05$ to determine whether the data fit a Poisson distribution.

6. 3 fair cubes are rolled. The first cube has 3 blue sides and 3 orange sides. The second cube has 4 blue sides and 2 orange sides. The third cube has 5 blue sides and 1 orange side. Find the probability that exactly two of the three dice come up showing blue sides.

7. Let $X_1, X_2, \ldots, X_n$ be random sample of size n from a normal population with $\mu = 0$ and unknown variance σ^2. Use the Neyman-Pearson lemma to construct the most powerful critical region of size α to test the null hypothesis $\sigma^2 = 1$ against the alternative $\sigma^2 = 2$.