6.2 *P*–value

Instead of performing a hypothesis test on a claim such as H_0: $\mu=2$ and H_a: $\mu\neq2$ with a significance level of α, some researchers will simply state "$\mu\neq2$ with $P=0.0047$". What does this mean? Provide a visual explanation.

According to Devore, the P-value is the probability, calculated assuming that the null hypothesis is true, of obtaining a value of the test statistic at least as contradictory to H_o as the value calculated from the available sample.

In the code I submitted, the test statistic that was calculated for this scenario is 2.83. Since $0.0047 << 2.83$, the researchers are saying that the alternative hypothesis, H_a, is likely to be true since the p-value is much smaller than the test statistic. In other words, it is unlikely to obtain the test statistic if the null hypothesis were true, so they assume that some alternative hypothesis is more likely to be true.