Concept List
Chapter 6: Hypothesis Testing

Terms:
1. null hypothesis
2. alternative hypothesis
   (a) 1-sided
   (b) 2-sided
3. test statistic
4. level of significance
5. critical region
6. z-ratio
7. P-value
8. weird language:
   (a) “fail to reject”
   (b) “statistically significant”
9. hypothesis testing with binomial data
   (a) “large sample” case
   (b) “small sample” case
10. Type I error (reject an $H_0$ which is true.)
11. Type II error (accept an $H_0$ which is false.)
12. power curve
13. generalized likelihood ratio

Formulas:
1. “Large-sample” criterion for using normal approximation with binomial data:
\[ 0 < np_0 - 3\sqrt{np_0(1 - p_0)} < np_0 + 3\sqrt{np_0(1 - p_0)} < n \]
   (Interpretation: $0 < \mu_0 - 3\sigma_0 < \mu_0 + 3\sigma_0 < n$, i.e. possible empirical outcomes extend to include three standard deviations around the de facto mean.)

2. (generalized likelihood ratio)
\[ \lambda = \frac{\max_\omega L(\theta)}{\max_\Omega L(\theta)}, \]
where $\omega$ is the set of all values of $\theta$ permissible under a null hypothesis, and $\Omega$ is the set of all values of $\theta$ permissible under an alternative hypothesis.