Topic 4 problems: signal detection theory

1. Use R to calculate d' and c for the following (false alarm, hit) pairs.
   (a) (.45, .88)
   (b) (.36, .94)
   (c) (.25, .30)
   (d) (.85, .95)
2. Explain why the observer's criterion can be estimated as $\hat{c} = -0.5(z(\text{H}) + z(\text{FA}))$.
3. `sdt.R` simulates a 10,000-trial experiment. Vectorize this code, i.e., rewrite the code without using a `for` loop. Instead, represent the signal number, the decision variable, and the observer's response as 10,000 x 1 vectors.