1. Suppose $X$ has probability mass function $p(x \mid \theta) = \binom{n}{x}\theta^x(1-\theta)^{n-x}$ for $x = 0, 1, \ldots, n$, $0 \le \theta \le 1$.

consider the parametrization $\beta = \log(\frac{\theta}{1-\theta})$. Find the Fisher Information for $\beta$.

Now derive the posterior density for $\beta$ using a transformation of variables approach