Conditional probability
Week1-ex3, problem statement

Suppose that if $\theta = 1$, then y has a Binomial distribution with success probability 0.2, and if $\theta = 2$, then y has a Binomial distribution with success probability 0.6. Also, suppose that the sample size is $n = 10$ and $Pr(\theta = 1) = 0.5$ and $Pr(\theta = 2) = 0.5$.

   a) Write the formula for the marginal probability density for y and sketch it.
   b) What is $Pr(\theta = 1 | y = 3)$
   c) skecth the posterior predictive distribution for a new observation $\tilde{y}$ with sample size $\tilde{n} = 10$. What is the posterior predictive probability that $\tilde{y} = 3$?

Grading

Total 10 points: 3 points for getting a) correct. 4 points for getting b) correct. 3 points for getting c) correct.