Problem 1: Defective coin

(3/3 points)

A defective coin minting machine produces coins whose probability of Heads is a random variable Q with PDF

$$f_Q(q) = \begin{cases} 3q^2, & \text{if } q \in [0,1], \\ 0, & \text{otherwise.} \end{cases}$$

A coin produced by this machine is tossed repeatedly, with successive tosses assumed to be independent. Let A be the event that the first toss of this coin results in Heads, and let B be the event that the second toss of this coin results in Heads.

1. $\mathbf{P}(A) =$ 3/4 ✔

   (Your answer should be a number.)

2. Find the conditional PDF of Q given event A. Express your answer in terms of q using standard notation .

   For $0 \le q \le 1$, $f_{Q|A}(q) =$ 4*q^3 ✔

3. $\mathbf{P}(B \mid A) =$ 4/5 ✔

   (Your answer should be a number.)

You have used 2 of 2 submissions

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