Math 3160 Quiz 5 September 24, 2021

(1) Suppose we flip a fair coin two times. For two heads we win $4, for two tails we lose $2, and otherwise we neither win nor lose. What is the expected value of the outcome?

(2) What is the variance?

(3) Suppose that, for a flu test, the true positive rate is 0.8 and the false positive rate is 0.1
If we know that the rate of infection in the population is 0.1, then what is the rate of positive tests in this population?

Extra credit:
if the test is negative, what is the probability that the person is infected?