P**roblem 2**

Independent Events and Bayes Theorem

2.1

Q: For events A, B prove:

A:

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Therefore,

Using bayes theorem, we can prove

2.2

Let X, Y , and Z be random variables taking values in {0, 1}. The following table lists the

probability of each possible assignment of 0 and 1 to the variables X, Y , and Z:

1. Is X independent of Y? Why or why not?

No, X and Y are not independent. This is because if you calculate it will not equal which means they not independent.

1. Is X conditionally independent of Y given Z? Why or why not?

Yes, by using the formula, to prove whether it is conditionally independent, I could prove it was equal using the following values: as it returned and

Therefore,

1. Calculate