Quiz 1 AI1110

1 Definitions

1. For any event $A, 0 \leq \Pr(A) \leq 1$.
2. $A \cup B \triangleq A + B$.
3. $A \cap B \triangleq AB$.
4. The null and complete event are $\phi = 0, S = 1$.
5. If $AB = 0, \Pr(A + B) = \Pr(A) + \Pr(B)$.
6. $(A + B)' = A'B'$

2 Problems

Prove the following:

1.

$$A = AB + A'B' \tag{2.1.1}$$

2.

$$\Pr(A) = \Pr(AB) + \Pr(AB') \tag{2.2.1}$$

3.

$$A + B = B + AB' \tag{2.3.1}$$

4.

$$\Pr(A + B) = \Pr(A) + \Pr(B) - \Pr(AB) \tag{2.4.1}$$