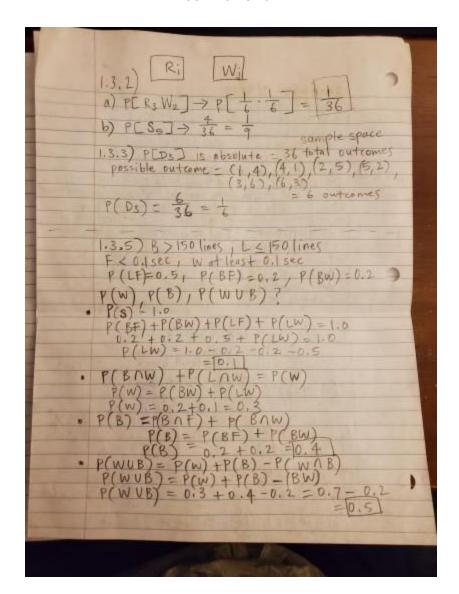
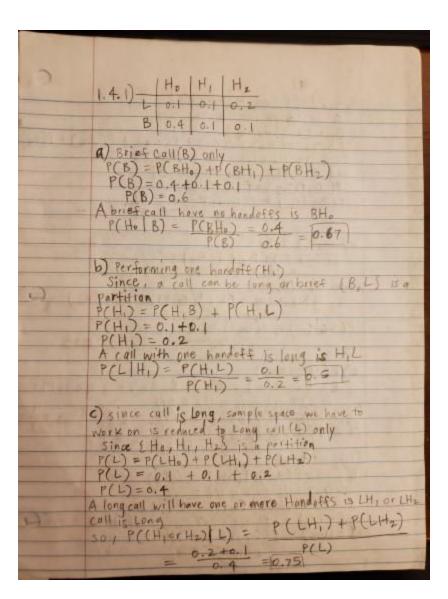
EE381 Homework 1





1.4.2) P(rolling any number) = $\frac{1}{6}$ G₁ is sample case in this case G₂ = $\{2, 3, 4, 5, 6\}$ P(G₁) = P(R₂) + P(R₃) + P(R₄) + P(R₆) + P(R₆) P(G₁) = 116 + 1/6 + 1/6 + 1/6 + 1/6 = 5/6 and R₃ = $\{3\}$ is G₁ ∩ R₂ = $\{3\}$ P(G₁ ∩ R₃) = P(R₃) = $\frac{1}{6}$ P(R₃ | G₁) = P(G₁ ∩ R₃) = $\frac{1}{6}$ P(R₃ | G₁) = $\frac{1}{6}$ = 5/6 = 0.2 P(G,) b) G3 = {4,5,63 P(G3) = P(R4)+P(R5)+P(R6) = 1/6+1/6+1/6=3/6 and R6 = [6] G3 1 R6 = (6) = R6, P(G3 1 R6) = P(R6) = P(R6 Gs) = P(Gs 1 R6) 0.33 3/4 c) E(Rollis even) $E = \{2, 4, 6\}, P(E) = P(R_2) + P(R_4) + P(R_4) + P(R_5) + P(R_5)$ $d)G_{3} = \{4,5,6\}$ $P(G_{3}) = P(R_{4}) + P(R_{5}) + P(R_{4})$ $P(G_{5}) = 1/6 + 1/6 + 1/6 = 3/6$ $E = \{2,4,6\}, G_{3} \cap E = \{4,6\}$ $P(G_{1} \cap E) = P(R_{4}) + P(R_{4}) = 1/6 + 1/6 = 2/6$ $P(E|G_{3}) = P(G_{3} \cap E) = 2/6$ $P(E|G_{3}) = 3/6 = 0.67$

1.4.3) a) $S = \{2,3,4\}$ P(2) = P(3) = P(4) = 1/3 $E = \{2,4\}$ P(E) = 1/3 + 1/3 = 2/3 $C_2 = 2$ $E \cap C_2 = 2$ $E \cap C_2 = 2$ $E \cap C_2 = 2$ P(C2 | E) = P(EAC2) = 1/3 = 6 5 Sample space is b) $C_2 = 2$ $P(C_2) = 1/3$ $E = \{2, \pm 3\}$ $E \cap C_2 = \{23\}$ P(E|Cz) = P(EACz) P(A and B) = P(B). Mutually exclusive P(A and B) = 0; Because levente P(A and B) = P(A) + P(B). Since, P(A) + P(B) = P(A)^2 = P(B) we get P(A) = P(B) = 0 1.6.7) a) If A and B are Mutually exclusive P(A UB) = 0 P(A UB) = P(A) + P(B) - P(A DB) 5/8 = $\frac{3}{8}$ + P(B) - 0 => P(B) = $\frac{2}{8}$ = $\frac{1}{4}$

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P(A \cap B^c) = P(A) - P(A \cap B)
= \frac{3}{8} - 0 = \frac{3}{8}
   P(AUB^{c}) = 1 - P(B) + P(AOB)
= 1 - 1/4 + 8
= P(AUB^{c}) = 3/4
b) No because P(AUB) = 0
P(A) . P(B) = 3/B + (14 = 3/32
        P(AUB) + P(A) · P(B)
1.6.8) a) P(C AD) = P(C) . P(D)
P(C' \cap D') = 1 - P(CVD) = 1 - [P(C) + P(D) - P(C \cap D)]
= 1 - [\frac{1}{2} + \frac{2}{3} - \frac{1}{3}] = \frac{1}{6}
b) P(CVD') = P(c) + P(0) - P(CDD)

= \frac{1}{2} + \frac{2}{3} - \frac{1}{3}

P(CVD') = \frac{5}{6}

P(CVD') = 1 - P(D) + P(CDD)

= 1 - \frac{2}{3} + \frac{1}{3} = \frac{2}{3}

P(D') = 1 - P(D) = 1 - \frac{2}{3} = \frac{1}{3}
P(C \cap D^c) = \frac{1}{6} P(C) \cdot P(D^c) = \frac{1}{2} \times \frac{1}{3} = 0

= C \text{ and } D^c \text{ are independent} + 0
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