Assignment 4

By

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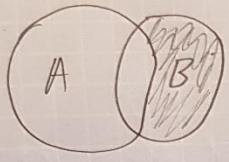
Time spent:
Christoffer -13 h
Erik -13 h

① A: students with a 15 min walk
B: walking students

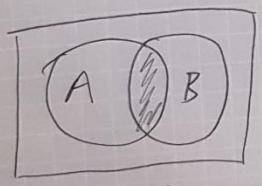
$A^c \cap B$: includs walking studens which have more than 15 min walk



Shaded area is: $A^c \cap B$

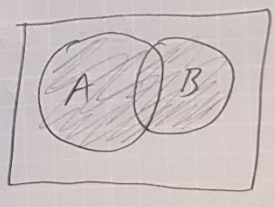
② A: Third-year student
B: Students in data science

a)



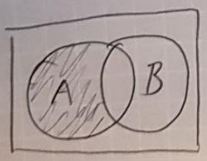
$A \cap B$

c)



$A \cup B$

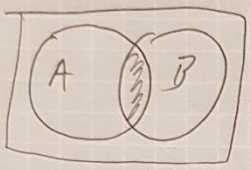
b)



$A - B$

(3)

A: master card (26%)
B: Visa (63%)



$A \cap B$: Both Mastercard and Visa 12%

Propability:

$P(A) + P(B) - P(A \cap B) = P(A \cup B)$

This gives

$0,26 + 0,63 - 0.12 = 0,77$

$= 77\%$

(4)

x has:

$C(x)$ = Cat, $D(x)$ = Dog, $P(x)$ = Parrot

a) $\exists x (D(x) \cdot C(x) \cdot P(x))$

b) $\forall x (D(x) \mid C(x) \cdot P(x))$

c) $\exists x (E(x) \cdot P(x) \rightarrow D(x))$

d) $\exists x P(x) \wedge \exists x C(x) \wedge \exists x P(x)$

e) Negate b:

$\forall x \neg (D(x) \vee C(x) \vee P(x))$

Negate c:

$\exists x (D(x) \wedge \neg C(x) \wedge \neg P(x))$

(5)

$(p \to q) \vee (p \to r) \equiv p \to q \vee r$

rewrite $p \to q$ to $\neg p \vee q$

same applies to $p \to r$, $\to \neg p \vee r$

this gives the equation

$(\neg p \vee q) \vee (\neg p \vee r) \to \neg p \vee (q \vee r)$

$\neg p \vee (q \vee r)$ can be rewritten as

$p \to q \vee r$ which what