

Introduction

Exercises

1. Exercise 1:

- (a) Let P stand for "We'll have a reading assignment", Q for "We'll have a homework problem" and R for "We'll have a test", then

$$(P \vee Q) \wedge \neg(Q \wedge R)$$

.

- (b) Let P stand for "You will go skiing" and Q for "There will be snow", then

$$\neg P \vee (P \wedge \neg Q)$$

- (c) $\neg[(\sqrt{7} < 2) \wedge (\sqrt{7} - 2)]$

2. Exercise 2:

- (a) Let J stand for "John is telling the truth" and B for "Bill is telling the truth", then

$$(J \wedge B) \vee (\neg J \wedge \neg B)$$

- (b) Let F stand for "I'll have fish", C for "I'll have chicken" and M for "I'll have mashed potatoes", then

$$(F \vee C) \wedge \neg(F \wedge M)$$

- (c) Let X stand for "3 is a common divisor of 6", Y for "3 is a common divisor of 9" and Z for "3 is a common divisor of 15", then

$$X \wedge Y \wedge Z$$

3. Exercise 3: Let us define some statements for the rest of the exercise. Let A stand for "Alice is in the room" and B for "Bob is in the room",

- (a) We have $A \wedge B =$ "Alice and Bob are both in the room", then

$$\neg(A \wedge B)$$

- (b) $\neg A \wedge \neg B$

- (c) $\neg A \vee \neg B$

- (d) $\neg(A \vee B)$

4. Exercise 4:

- (a) is well formed.
 (b) is not well formed.
 (c) is well formed.
 (d) is not well formed.

5. Exercise 5:

- (a) I won't buy both the pants without the shirt.
 (b) I won't buy the pants and I won't buy the shirt / I will neither buy the pants nor the shirt.
 (c) Either I won't buy the pants or won't buy the shirt.

6. Exercise 6:

- (a) Either Steve is happy or George is happy, but either of them is not.