Section 1.8

Ex. 4.

~~Assume that~~

Cases: $a \le b \le c$

$a \le c \le b$

$b \le a \le c$

$b \le c \le a$

$c \le a \le b$

$c \le b \le a$

Select one of them as an example:

like: $a \le b \le c$

$$\min(a, \min(b,c)) = \min(a,b) = a$$

$$\min(\min(a,b), c) = \min(a,c) = a$$

so: $\min(a, \min(b,c)) = \min(\min(a,b), c)$

Ex. 6.

Assume that x is odd

y is even

then we know $x = 2k+1$

$y = 2k$

so: $5x + 5y = 5(2k+1) + 5(2k)$

$= 5(4k+1)$

$= 20k+5$

$= 5(4k+1)$

~~we know $4k+1$ is odd~~

then we know: $5x+5y$ is odd

we know: when x is even

y is odd

the result is the same

Section 1.6

Ex.6: let: p be "It rained" q be "It is foggy"

对

r be "The sailing race will be held"

j be "The livesaving demonstration will go on"

k be "the trophy will be awarded"

we know: $(\neg p \vee \neg q) \to (r \wedge j)$; $r \to k$ $\neg k$

Then 1. $\neg k$

2. $r \to k$

3. $\neg r$

4. $(\neg p \vee \neg q) \to (r \wedge j)$

5. $\neg(\neg p \vee \neg q)$

6. $p \wedge q$

so: p

Ex.14.

a. EG

b. Hypothetical Syllogism

Section 1.7

Ex.18:

a. ~~A~~ Assume n is odd, then we know $3n+2$ is odd too
so we can prove that if n is an integer and $3n+2$ is even
then n is even

b. Assume that $3n+2$ is odd, then we know n must be an odd integer
so it has contradiction to the conclusion "n is even"
So we can prove it.