Page 13 (example 8):
a)true
b)true
c)false
d)false
d)false
Page 16 (example 36):

a)

p	$p \oplus p$
T	F
F	F

b)

p	$p \oplus \neg p$
T	T
F	T

c)

p	q	$p \oplus \neg q$
T	T	T
T	F	F
F	T	F
F	F	T

d)

p	q	$\neg p \oplus \neg q$
T	T	F
T	F	T
F	T	T
F	F	F

e)

p	q	$(p \oplus q) \vee (p \oplus \neg q)$
T	T	T
T	F	T
F	T	T
F	F	T

f)

p	q	$(p \oplus q) \wedge (p \oplus \neg q)$
T	T	F
T	F	F
F	T	F
F	F	F

Page 57 (examples 23 and 24):

P(x):x is in your class,C(x):x is a person among all people

23 a) H(x):x can speak Hindi : $\exists x(P(x) \wedge H(x))$
$\exists x(C(x) \wedge H(x))$

23 b) H(x):x is friendly : $\forall x(P(x) \Rightarrow H(x))$
$\forall x(C(x) \Rightarrow H(x))$

23 c) H(x):x was not born in California : $\exists x(P(x) \wedge H(x))$
$\exists x(C(x) \wedge H(x))$

23 d) H(x):x has been in a movie : $\exists x(P(x) \wedge H(x))$
$\exists x(C(x) \wedge H(x))$

23 e) H(x):x has not taken a course in logic programming : $\forall x(P(x) \Rightarrow H(x))$

$\forall x(C(x) \Rightarrow H(x))$
24 a) H(x):x has a cellular phone : $\forall x(P(x) \Rightarrow H(x))$
$\forall x(C(x) \Rightarrow H(x))$

24 b) H(x):x has seen a foreign movie : $\exists x(P(x) \wedge H(x))$
$\exists x(C(x) \wedge H(x))$

24 c) H(x):x cannot swim : $\exists x(P(x) \wedge H(x))$
$\exists x(C(x) \wedge H(x))$

24 d) H(x):x can solve quadratic equations : $\forall x(P(x) \Rightarrow H(x))$

$\forall x(C(x) \Rightarrow H(x))$

24 e) H(x):x does not want to be rich : $\exists x(P(x) \wedge H(x))$
$\exists x(C(x) \wedge H(x))$

Page 68(examples 1 and 2):

1 a)For every real number there is a real number which is greater than it.

1 b)For every two real numbers if both of them are greater than or equal to zero the product of them would be greater than or equal to zero.

1 c)For every two real numbers there is a real number that equals to product of them.

2 a)There is a real number that the product of it and any real number equals to that number.

2 b)For every two real numbers if the first number is greater than or equal to zero and the second number is less than zero the first number minus second number would be greater than zero.

2 c)For every two real numbers there is a number which the first number equals to the summation of the second number and that number.

Page 71 (examples 27 and 28):
27:
a)true b)true c)true d)true
e)true f)false g)false h)true
i)false
28:
a)true b)false c)true d)false
e)true f)falsecan get a high-paying job
g)true h)false
i)false j)true

Page 83 (examples 13 and 14):
13:
a) p:is a student in this class.,q:knows how to write programs in JAVA.,r:can get a high-paying job.
(Doug) p , q , $q \Rightarrow r$
$p \wedge q \wedge (q \Rightarrow r), p \wedge (q \wedge (q \Rightarrow r)), (p \wedge r)$

b) p:is a student in this class.,q:enjoys whale watching.,r:cares about ocean pollution.
(someone) $p \wedge q, q \Rightarrow r$
$(p \wedge q) \wedge (q \Rightarrow r), p \wedge (q \wedge (q \Rightarrow r)), (p \wedge r)$

c) p:is a student in this class.,q:owns a personal computer.,r:can use a word processing program.

(Zeke) $p \Rightarrow q, q \Rightarrow r$
$p \Rightarrow r$

d) p:is in New Jersey.,q:lives within 50 miles of the ocean.,r:has never seen the ocean.
(someone) $p \Rightarrow q, p \wedge r$
$(r \wedge p) \wedge (p \Rightarrow q), r \wedge (p \wedge (p \Rightarrow q)), r \wedge q$

14:
a) p:is a student in this class.,q: owns a red convertible.,r: has gotten at least one speeding ticket.
(Linda) $q \Rightarrow r, p \wedge q$
$(p \wedge q) \wedge (q \Rightarrow r), p \wedge (q \wedge (q \Rightarrow r)), (p \wedge r)$

b) p: lives at the room.,q: has taken a course in discrete mathematics.,r: can take a course in algorithms.
(all roommates) $p \wedge q, q \Rightarrow r$
$(p \wedge q) \wedge (q \Rightarrow r), p \wedge (q \wedge (q \Rightarrow r)), (p \wedge r)$

c) p: movie produced by John Sayles.,q: movie is wonderful.,r:movie is about coal miners.
$p \Rightarrow q, p \wedge r$
$(r \wedge p) \wedge (p \Rightarrow q), r \wedge (p \wedge (p \Rightarrow q)), (r \wedge q)$

d) p: is in this class.,q: has been to France.,r: visits the Louvre.
$p \wedge q, q \Rightarrow r$
$(p \wedge q) \wedge (q \Rightarrow r), p \wedge (q \wedge (q \Rightarrow r)), (p \wedge r)$

Page 96 (examples 27,28 and 29):
27:
We think there is an answer and that is $\frac{a}{b}$
so,$\frac{a^3}{b^3} + \frac{a}{b} + 1 = 0 \Rightarrow a^3 + ab^2 + b^3 = 0$
and $b \neq 0$,both of a and b can't be even(because:$\frac{a}{b}$ is a rational number and a,b are integers).
If both of a and b are odd numbers:$a^3 + ab^2 + b^3$(is odd and)$\neq 0$:
$a^3$is odd,$ab^2$is odd,$b^3$is odd$\Rightarrow$an odd number+an odd number+an odd number=an odd number.
If a is odd and b is even:$a^3 + ab^2 + b^3$(is odd and)$\neq 0$:
$a^3$is odd,$ab^2$is even,$b^3$is even$\Rightarrow$an odd number+an even number+an even number=an odd number
If a is even and b is odd:$a^3 + ab^2 + b^3$(is odd and)$\neq 0$:
$a^3$is even,$ab^2$is even,$b^3$is odd$\Rightarrow$an even number+an even number+an odd number=an odd number

28:
p:n is a positive integer,q:n is even,r: $7n + 4$ is even
$p \Rightarrow (q \Leftrightarrow r)$
-$p \Rightarrow (2|7n + 4), (2| - 4) \Rightarrow 2|7n \Rightarrow 2|n \Rightarrow q$
-$p \Rightarrow (2|n) \Rightarrow (2|7n), (2|4) \Rightarrow (2|7n + 4) \Rightarrow r$

29:
p:n is a positive integer, q:n is odd, r:5n+6 is odd
-$p \Rightarrow (n = 2k + 1) \Rightarrow (5n + 6 = 10k + 11) \rightarrow (5n + 6 =$
$10(k + 1) + 1), (2|10(k + 1)) \Rightarrow r$
-$p \Rightarrow (5n + 6 = 2k + 1) \Rightarrow (5(n + 1) = 2k) \Rightarrow (2|n + 1) \Rightarrow (n + 1 = 2m) \rightarrow (n =$
$2m - 1) \Rightarrow q$

Page 114(examples 27 and 28):
27:
We have n odd numbers and n even numbers.The subtraction of two odd numbers is even and whenever we subtract two odd numbers the count of odd numbers reduces by one and the count of even numbers increases by one.The subtraction of two even numbers is an even number and does not change the count of odd numbers and only the subtraction of an even number and an odd number is an odd number which does not change the count of odd numbers again.In this case if n is odd at last we will have an odd number which should be subtracted with an even number so the last answer will be odd and if n is even the answer will be even.

28: