Homework 4, Section 1.5: 3, 4(b,f), 5(d), 11, 14, 15, 22, 25

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Homework

3.

q	p $\wedge$ q are lying	$\neg$p (A is lying)
T	T	F
F	F	F
T	F	T
F	F	T

4. B)

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

4. F)

p	q	r	p $\vee$ q	$\neg\ p\ \vee\ q$	$\neg p \rightarrow (p\ \vee\ q)$
T	T	F	T	F	F
T	F	F	T	F	F
F	T	T	T	T	T
F	F	T	F	T	T

5. D)

p	q	r	$p \to (q \to r)$	$p \wedge q \to r$
T	T	T	T	T
T	T	F	F	F
T	F	T	T	T
T	F	F	T	T
F	T	T	T	T
F	T	F	F	F
F	F	T	T	T
F	F	F	T	T

These statements are equivalent

11. A)

True

11. B)

False. If x = 11, then x is not < 10

11. C)

True

11. D)

True

11. E)

True, because it is not False.

14. A)

D= All integers that end in 5
B(n) = 5 mod $n = 0$
$\forall_n \in D, B(n)$

14. B)

D= All integers that end in 3
B(m) = 3 mod $n = 0$
$\forall_m \in D, B(m)$

14. C)

D= Multiples of 5 B(n) = $n^2 - 1$ = multiple of 3
$\forall_n \in D, B(n)$

14. D)

D= Positive real numbers greater than $\sqrt{2}$
B(x) = $2/x > \sqrt{2}$
$\forall_x \in D, B(x)$

15.

A and D are true.

22. A)

If n is a positive integer and n is even then for all n $\frac{1}{n} < 1$

22. B)

If a and b are positive integers and $a - b$ is odd then for all a and b $a^2 \neq 2b^2$

22. C)

If a and b are positive integers and a and b are even then for all a and b $a/b \neq 1 + b/a$

22. D)

If there is a right triangle with perimeter equal to three times the length of one leg, then for all triangles that have a perimeter not equal to three times the length of one leg, they are not right triangles.

25. A)

If you do attend the concert you won't get and F for the course.

25. B)

We won't go if you go.

25. C)

If you do eat your breakfast, you won't go hungry.

25. D)

If a quadrilateral is not a square, then it does not have four equal sides and four equal angles.

25. E)

If a triangle does not either have two equal sides or two equal angles, then it is not an isosceles triangle.