


$B^c = U \setminus B = U - B$

 $B = \{-5, -3, -2, 3, 5\}$
 $A \cup B = \{-3, -2, -1, 0, 1, 2, 3, -5, 5\}$
 $U - (A \cup B) = \{-4, 4\} = (A \cup B)^c$
 $A^c = U - A = \{-5, -4, 4, 5\}$
 $A^c \cap B = \{-4, 4\}$

Jul 1-9:42 AM

$P(A) = \{\emptyset, \{1\}, \{2\}, \{1, 2\}\}$
 $A = \{\emptyset, \{1\}\}$
 $P(A) = \{\emptyset, \{\emptyset\}, \{\{1\}\}, \{\emptyset, \{1\}\}\}$
 $= \{\emptyset, \{\emptyset\}, \{\{1\}\}, \{\emptyset, \{1\}\}\}$
 $A = \{\emptyset, \{1\}\}$
 $P(A) = \{\emptyset, \{1\}, \{\emptyset, 1\}\}$

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$(p \vee (q \wedge r)) \rightarrow \sim q = A$

p	q	r	$q \wedge r$	$p \vee (q \wedge r)$	$\sim q$	A
T	T	T	T	T	F	F
T	T	F	F	T	F	T
T	F	T	F	T	T	F
T	F	F	F	T	T	F
F	T	T	T	T	F	F
F	T	F	F	F	F	T
F	F	T	F	F	T	T
F	F	F	F	F	T	T

Jul 1-10:06 AM

All people who love
 $\forall x: P(x) \rightarrow Q(x)$
 inverse:
 $\exists x: \sim P(x) \wedge Q(x)$
 $\forall x: P(x) \rightarrow Q(x)$
 $\forall x: \sim P(x) \rightarrow \sim Q(x)$
 All people who do not love
 $\forall x: \sim P(x)$
 $\forall x: P(x) \rightarrow Q(x)$
 $\forall x: \sim P(x) \rightarrow \sim Q(x)$
 All people who do not love
 $\forall x: \sim P(x)$
 $\forall x: P(x) \rightarrow Q(x)$
 $\forall x: \sim P(x) \rightarrow \sim Q(x)$
 do not love
 inverse:
 $\exists x: \sim P(x) \wedge Q(x)$

Jul 1-10:20 AM

$\neg r \wedge s$
 $\therefore r$ is false
 $\frac{1 \rightarrow r}{\therefore \neg q}$ (2)
 $\frac{p \vee q}{\therefore ?}$ (4)
 $\frac{p \wedge s \rightarrow t}{\therefore t}$ (3)

Jul 1-11:01 AM

Find a proposition with p, q, r such that p and r are true and q is false, otherwise false
 p is true, $\sim q$ is true
 r is true, then:
 $p \wedge \sim q \wedge r$

Jul 1-11:16 AM

$(p \wedge q \wedge \sim r) \vee (\sim p \wedge q \wedge \sim r)$
 $\vee (\sim p \wedge \sim q \wedge r)$

$(p \wedge \sim p) \vee (q \wedge \sim q) \vee (r \wedge \sim r)$

p	q	r
T	T	T
T	T	F
T	F	T
T	F	F
F	T	T
F	T	F
F	F	T
F	F	F

$S = (p \wedge \sim q) \vee (\sim p \wedge q)$
 $A \wedge B \equiv \sim(A \vee \sim B)$
 $\neg(T \vee \neg) \vee (F \vee \neg)$

Jul 1-11:20 AM

Determine whether $p \rightarrow (q \rightarrow r)$ and $p \rightarrow (q \wedge r)$ are equivalent

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

Part 4 write a proposition equivalent to $\sim(p \wedge q)$ that uses only \neg and the connective \wedge .

$\sim(\sim p \wedge q)$

part 5

$\sim p \wedge \sim q$ equivalent

$\sim(p \vee q)$

Jul 1-11:34 AM