0	
Problem 1	a) FALSE (Acme Computer's revenue was larger)
Kalen Will	b) TRUE (Both of them true and A between them)
	c) TRUE (FVT=T)
	d) TRUE (F→T=T)
	e) TRUSE (T -T =T)
	exact = aldolare 1 (r.
	b) the object of the contract
Problem 2	p: It is below freezing
	q: It is snowing
	a) pra
	b) p 1 - 19
	c) -7p 1 - 7q
	d) pvg
	$g p \rightarrow g$
	f) (pvg) 1 (mup -> -19)
	g) perg

	(I = T <-) 3 DX7 (L	
Problem 3	(TET -T) JUST 6	
	a) Ivariable => & = 2 rows	
	b) 4 variables => 24= 16 rows	
	c) 6 variables => 2 = 64 rows	Restor
	d) 4 variables => 24 = 16 rows	

Problem 4	a)	P	1-19	PA-P	b) pv-1p
		T	F	F	T
		F	T	F	
	F.	<i>F</i>			
712/202	d) p	9	pv	g pag	$(pvq) \rightarrow (pnq)$
	T	as & F	LA T	Fuels	F
	F			las Not Fare	
	Anton To	ma ^B T	T	T	T
	F	F	F	F	T
		20 NT 8			
	c) p	9 F	79 p46	1-19, ($pv-q) \rightarrow q$
			f F		Transfer markets
	T	T	F T		Table
	F	F	TT		F

4	+	P 9 T T T F F F	P→9 T F T	9 -> P T T F	$(p \rightarrow q) \rightarrow (q \rightarrow p)$ T T F	
	e)	P 9 T T T F F F F	P→9 T F T	79→7p T F T	(p→q) ← (-1g→ T T T T	7p)

Problem 5	First professor said aldon't know, because she doesn't know
	do other professors want a coffee. To remind the question
	do other professors want a coffee. To remind the question was a Poes everyone wants a coffee? And if she didn't want, she would tell "no". Same about second professor. But third professor said "No, not everyone wants a coffee" which means that she doesn't want.
	want, she would tell uno". Same about second professor.
	But third professor said " No, not everyone wants a coffee"
	which means that she doesn't want.

Problem B	a) Jan is not rich, and is not trappy. b) Carlos will not bicycle and will not run tomorrow. c) Mei doesn't walk and doesn't take the bus to class. d) Ibrahim is not smart, and is not hard working.
Problem 7	a) p q p p q $(p \land q) \rightarrow p$ T f f T f T T f f T f

(1)	d) p q T T T F F T F F	A F	F	(pnq) → (T T T T	
	e) p 9 T T T F F T F F	F	T F	T	
	FTF	T F T	F T F	79 7(F T F	T T T

Problem A	a) $(p \wedge q) \rightarrow p$	b) $p \rightarrow (pvq)$ $\neg p \vee (pvq)$
	7(p19) Vp	(7pvp)vg
•	(7pv-19) vp	TVq=T
	(7pVp) V7g	
	TV-19 = T	
		1) (-1) -2 (-2)
	c) $\neg p \rightarrow (p \rightarrow q)$ $\neg \neg p \lor (p \lor q)$	$d) (p \wedge q) \rightarrow (p \rightarrow q)$ $\neg (p \wedge q) \vee (p \vee q)$
	(pvp) vg	(-pV-19) V (pvg)
	TVQ=T	(-1pvp)v(-1qvq)
		TVT=T
		^\ /
	e) $\neg (p \rightarrow q) \rightarrow p$	$f) \rightarrow (p \rightarrow q) \rightarrow \neg q$
	-(-, (pvg))vp	-(-(pvg)) v-19 -(-pn-19) v-19
	$-\eta(-1\rho\Lambda-1q)V\rho$	(pvg)v-q
	(pvp)vg	(pv(19vp))
	Trg=T	PVT=T

TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT	PILO	(0/2) 26
TTFFFFTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT	Problem 9	$p \neq r \qquad q \rightarrow r \qquad (p \rightarrow r) \wedge (q \rightarrow r) \qquad p \vee q \qquad (p \vee q) \rightarrow r$
FTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT		
FTFTFTFTFTFTFTFTFTFTFTFTFTFTFTFTFTFTFT		THE TO THE TOTAL THAT THE TOTAL TOTA
FTFTFTFTFTFTFTFTFTTFTTFTTFTTFTTFTTFTTFT		FTTTTTTTT
TFFFTTFT FFFTT Logically equivalent Problem 10 Va & $\exists (P(x) \land Q(x))$ Vb $\exists (P(x) \land \neg Q(x))$ Vc & $\forall (P(x) \lor Q(x))$ Vc A $\forall (P(x) \lor Q(x))$ Vc $value$		FIF THE TOWN THE STANDS OF THE
FFF T T T T F T Logically equivalent Problem 10 Va = A		FTF TF TF
Problem 10 $Va)$ $\stackrel{?}{=}$ $\frac{1}{2}(P(x) \land Q(x))$ $Vb)$ $\frac{1}{2}(P(x) \land Q(x))$ $Vc)$ $\stackrel{?}{=}$ $\frac{1}{2}(P(x) \lor Q(x))$ (xd) $\frac{1}{2}$ $\frac{1}{2}(P(x) \lor Q(x))$ $\frac{1}{2}$ $\frac{1}{2$		TFFFTFTF
Problem 10 $Va)$ $\stackrel{?}{=}$ $\frac{1}{2}(P(x) \land Q(x))$ $Vb)$ $\frac{1}{2}(P(x) \land Q(x))$ $Vc)$ $\stackrel{?}{=}$ $\frac{1}{2}(P(x) \lor Q(x))$ (xd) $\frac{1}{2}$ $\frac{1}{2}(P(x) \lor Q(x))$ $\frac{1}{2}$ $\frac{1}{2$		FFF T T F T
Problem 10 $Va)$ $\stackrel{?}{=}$ $\frac{1}{2}(P(x) \land Q(x))$ $Vb)$ $\frac{1}{2}(P(x) \land Q(x))$ $Vc)$ $\stackrel{?}{=}$ $\frac{1}{2}(P(x) \lor Q(x))$ (xd) $\frac{1}{2}$ $\frac{1}{2}(P(x) \lor Q(x))$ $\frac{1}{2}$ $\frac{1}{2$		
$V_{b}) = \frac{1}{2}(P(x) \wedge \neg Q(x))$ $V_{c}) \neq \frac{1}{2}(P(x) \vee Q(x))$ $\times d) - \frac{1}{2}(P(x) \vee Q(x)) \text{ or } \forall_{x}(\neg P(x) \vee \neg Q(x))$ $(-P(x) \vee Q(x)) \text{ or } \forall_{x}((\neg P(x)) \wedge \{(Q(x))\}$		logically equivalent
$V_{b}) = \frac{1}{2}(P(x) \wedge \neg Q(x))$ $V_{c}) \neq \frac{1}{2}(P(x) \vee Q(x))$ $\times d) - \frac{1}{2}(P(x) \vee Q(x)) \text{ or } \forall_{x}(\neg P(x) \vee \neg Q(x))$ $(-P(x) \vee Q(x)) \text{ or } \forall_{x}((\neg P(x)) \wedge \{(Q(x))\}$		And the state of t
$V_{b}) = \frac{1}{2}(P(x) \wedge \neg Q(x))$ $V_{c}) \neq \frac{1}{2}(P(x) \vee Q(x))$ $\times d) - \frac{1}{2}(P(x) \vee Q(x)) \text{ or } \forall_{x}(\neg P(x) \vee \neg Q(x))$ $(-P(x) \vee Q(x)) \text{ or } \forall_{x}((\neg P(x)) \wedge \{(Q(x))\}$		# -10 · · · · · · · · · · · · · · · · · · ·
V_{c}) $\underset{\times}{\mathbb{A}}$ $\underset{\times}{\mathbb{A}}$ $(P(x) \vee Q(x))$ or $\underset{\times}{\mathbb{A}}$ $(P(x) \vee Q(x))$ or $\underset{\times}{\mathbb{A}}$ $(P(x) \vee Q(x))$ or $\underset{\times}{\mathbb{A}}$ $(P(x) \vee Q(x))$	Problem 10	
$(P(x) \vee Q(x)) $ or $\forall_x (\neg P(x) \vee \neg Q(x))$ $\forall_x \neg (P(x) \vee Q(x)) $ or $\forall_x ((\neg P(x)) \land ((\neg Q(x)))$		
$\forall_x \neg (P(x) \lor Q(x)) \rightarrow P(x) \land (\neg P(x)) \land (\neg P(x))$		
$\frac{1}{\sqrt{1-1}} \frac{1}{\sqrt{1-1}} 1$		$(xd) \rightarrow (P(x) \lor Q(x)) \circ (T(x) \lor \neg Q(x))$
$\frac{1}{\sqrt{\gamma}} \frac{(P(x) \vee Q(x))}{\sqrt{\gamma}} = \frac{1}{\sqrt{\gamma}} \frac{(P(x) \vee Q(x))}{\sqrt{\gamma}}$ or $\frac{1}{\sqrt{\gamma}} \frac{(P(x) \vee Q(x))}{\sqrt{\gamma}}$		
$OR - \overline{J}_{x}(P(x) \vee Q(x))$		$\forall_{x} \neg (P(x) \lor Q(x)) \rightarrow \forall_{x} ((\neg P(x)) \land \{Q(x)\})$
		$OR - \frac{1}{4}(P(x) \vee Q(x))$
		The state of the s

Problem 11	a) TRUE $f_n(n^2 \ge 0) \rightarrow any integer gives us zero or greater than b) FALSE \exists n(n^2 = 2) \rightarrow any integer cannot give us 2 if it is squared$
	c) TRUE \formall n(n2n) -> any integer gives us equal to or greater than
	d) FALSE In (n2<0) -> positive n2>0, negative n2>0, 000.
Problem 12	a) 7xP6x P(0) V P(1) V P(2) V P(3) V P(4)
	b) 4xP(x) P(0) 1 P(1) 1 P(2) 1 P(3) 1 P(4)
	c) =x-P(x) -P(0) V-P(1) V-P(2) V-P(3) V-P(4)
	d) $\forall x \neg P(x) - P(0) \wedge \neg P(1) \wedge \neg P(2) \wedge \neg P(3) \wedge \neg P(4)$
	e) - 3xP(x) same answer as in @ @
	f) -1 txP(x) same solution as in d
Problem 13	√a) ∃xH(x)
	15) Hx F(x)
	10) = 12-1C(x)
	1 d) 72 M(2)
	1/2/e) -3xP(x) or 4x-P(x)
Problem 14	va) -M(Chou, Koko)
	b) -M (Arlene, Sarah) \$-T (Arlene, Sarah)
	vc) -7 M (Deborah, Jose)
	vd) ty M(x, Ken)
	ve) tx T(x, Nina)
	VA) YxT(x, Avi) V YxM(x, Avi) or Yx (T(x, Avi) VM (x, Avi))
	\sqrt{g} $\exists x \forall y (M(x, y))$
	1) = x y (M(x,y)) V = x y (T(x,y)) or = x y (M(x,y) V T(x,y)) (1) = x = y (M(x,y)) N = x = y (M(y,x)) or = x = y (M(x,y)) N M(y,x))
	V1) 72 34 (M(x,y)) A 72 34 (M(y,x)) or 3x 34 (M(x,y)) M(y,x))
	\sqrt{j} $\exists x M(x,x)$

Phk	$\lambda = A + A \left(-M(u, x) \wedge -T(u, x) \right)$
7(80.11	k) $\exists x \forall y \left(\neg M(y, x) \land \neg T(y, x) \right)$ L) $\forall x \exists y \left(M(xy, x) \lor T(y, x) \right)$
	n) $\exists_x \exists_y (M(x,y) \land T(y,x))$ n) $\exists_x \exists_y (\forall_z (M(x,z) \lor M(y,z) \lor T(x,z) \lor T(y,z)))$