problems.

Prob 24 page 20;

P	Q	R	(Q OR R)	P AND (Q OR R)	P AND Q	P AND R	(P AND Q) OR (P AND R)
T	T	T	T	T	T	T	T
T	T	F	T	T	T	F	T
T	F	T	T	T	F	T	T
T	F	F	F	F	F	F	F
F	T	T	T	F	F	F	F
F	T	F	T	F	F	F	F
F	F	T	T	F	F	F	F
F	F	F	F	F	F	F	F

SAME

Problem 28 page 20: "If NOT Q, NOT P."

Problem 44 page 21:

Negate: $\exists x \; \forall y \; (P(x) \text{ AND } Q(y))$,

Answer

$\forall x \; \exists y \; \text{NOT } (P(x) \text{ AND } Q(y))$

$\iff \forall x \; \exists y \; (\text{NOT } P(x)) \text{ OR } (\text{NOT } Q(y))$

Problem 66 page 22:

If m, n are integers and mn is odd, then m and n are odd.

Proof:

The contrapositive statement is:

"If m is even or n is even, then $m \cdot n$ is even".

Assume that m is even, $m = 2q$. Then $m \cdot n = (2q) \cdot n = 2(q \cdot n)$, so $2 | m \cdot n$ and $m \cdot n$ is even. Assume that n is even, $n = 2q$. Then $m \cdot n = m \cdot (2q) = 2(mq)$, so $2 | m \cdot n$.

Hence, the contrapositive statement holds. Q.E.D