

p and q

| p | q | $p \cdot q$ |
|-----|-----|-------------|
| 0 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |

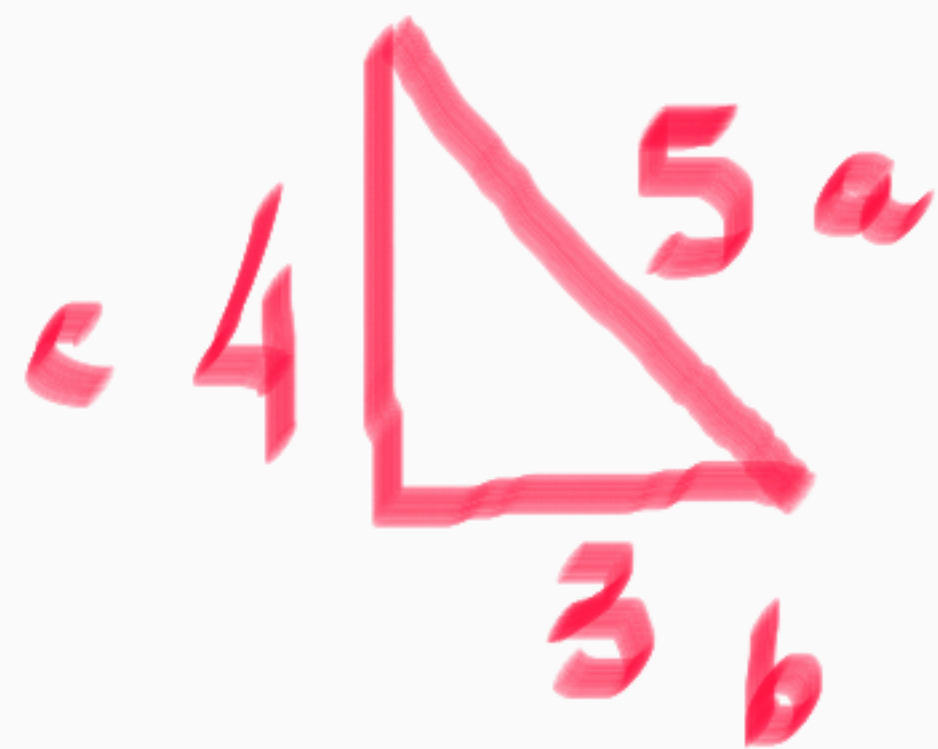
p OR q

$(p + q)$

| p | q | $p + q$ |
|-----|-----|---------|
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 1 |

\Rightarrow

[



$$\begin{cases} a+b > c & 8 > 4 & 1 \\ a+c > b & 9 > 3 & 1 \\ b+c > a & 7 > 5 & 1 \end{cases}$$

$$\begin{cases} c < a+b \\ b < a+c \\ a < b+c \end{cases}$$

| p | q | $\sim q$ | $p \vee \sim q$ | $\sim(p \vee \sim q)$ |
|---|---|----------|-----------------|-----------------------|
| V | V | F | $V + F = V$ | F |
| V | F | V | $V + V = V$ | F |
| F | V | F | $F + F = F$ | V |
| F | F | V | $F + V = V$ | F |

F F V F

S

2-4

$(P \oplus Q)'$

S

| 1 | 2 | 3 | 4 | 5 |
|---|---|----------|-----------------|-----------------------|
| p | q | $\sim q$ | $p \vee \sim q$ | $\sim(p \vee \sim q)$ |
| V | V | F | V + F = V | F |
| V | F | V | V + V = V | F |
| F | V | F | F + F = F | V |
| F | F | V | F + V = V | V |

F F V V

$$\neg(P \vee Q) \rightarrow Q :$$

$$(p+q)' \rightarrow q$$

$$2^2 = 4$$

| p | q | p+q | (p+q)' | (p+q)' → q | |
|---|---|-----|--------------|------------|---|
| 0 | 0 | 0 | 1 | 1 → 0 = 0 | F |
| 0 | 1 | 1 | 0 | 0 → 1 = 1 | ✓ |
| 1 | 0 | 1 | 0 | 0 → 0 = 1 | ✓ |
| 1 | 1 | 1 | 0 | 0 → 1 = 1 | ✓ |

$$(P \rightarrow \neg(Q \vee R))$$

$$(\neg P \rightarrow (Q \vee R))$$

$$(p \rightarrow (q + r))$$

| | p | q | r | q+r | (q+r) | p → (q+r) | |
|---|---|---|---|-----|-------|-----------|--|
| | 0 | 0 | 0 | 0 | 1 | 0 → 1 = 1 | |
| | 0 | 0 | 1 | 1 | 0 | 0 → 0 = 1 | |
| | 0 | 1 | 0 | 1 | 0 | 0 → 0 = 1 | |
| | 0 | 1 | 1 | 1 | 0 | 0 → 0 = 1 | |
| | 1 | 0 | 0 | 0 | 1 | 1 → 1 = 1 | |
| 6 | 1 | 0 | 1 | 1 | 0 | 1 → 0 = 0 | |
| 7 | 1 | 1 | 0 | 1 | 0 | 1 → 0 = 0 | |
| 8 | 1 | 1 | 1 | 1 | 0 | 1 → 0 = 0 | |

$$p=1 \quad q=0 \quad r=1$$

$$(0 \rightarrow (0 + 1))$$

$$(0 \rightarrow 1) = 1$$

$$(P \vee (\neg Q \vee \neg R))$$

$$(1 \vee (1 + 0))$$

$$(1 \vee (1))$$

$$1$$