

p y r son falsas. q y s son verdaderas ∨ ∧

10. p → q

f → v = V

(p → q) ∧ (q → r )

(f → v) ∧ (v → f)

v ∧ f

f

p y r son falsas. q y s son verdaderas



(v → (f ∧ v )) ∧ ((f → (f ∨ v)) ∧ v)

(v → f) ∧ ((f → v) ∧ v)

( f ) ∧ (v ∧ v)

( f ) ∧ (v)

F

p y r son falsas. q y s son verdaderas ∨ ∧ →



(( f ∧ f ) → ( v ∧ f )) → ( v ∨ f )

( f → f ) → v

v → v

v

• Sea F = (p ↔ q) → [(q ∨ r) ∧ (¬p ∨ ¬s)]. Se pide determinar formulas equivalentes a F en Forma Normal Disyuntiva y Forma Normal Conjuntiva.

24 = 16

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| p | q | r | s | ¬s | ¬p | 1.(p ↔ q) | (q ∨ r) | (¬p ∨ ¬s) | 2. [(q ∨ r) ∧ (¬p ∨ ¬s)] | 1 → 2 |  |
| V | V | V | V | F | F | V | V | F | F | F | ¬p ∨ ¬q ∨ ¬r ∨ ¬s |
| V | V | V | F | V | F | V | V | V | V | V |  |
| V | V | F | V | F | F | V | V | F | F | F | ¬p ∨ ¬q ∨ r ∨ ¬s |
| V | V | F | F | V | F | V | V | V | V | V |  |
| V | F | V | V | F | F | F | V | F | F | V |  |
| V | F | V | F | V | F | F | V | V | V | V |  |
| V | F | F | V | F | F | F | F | F | F | V |  |
| V | F | F | F | V | F | F | F | V | F | V |  |
| F | V | V | V | F | V | F | V | V | V | V |  |
| F | V | V | F | V | V | F | V | V | V | V |  |
| F | V | F | V | F | V | F | V | V | V | V |  |
| F | V | F | F | V | V | F | V | V | V | V |  |
| F | F | V | V | F | V | V | V | V | V | V |  |
| F | F | V | F | V | V | V | V | V | V | V |  |
| F | F | F | V | F | V | V | F | V | F | F | p ∨ q ∨ r ∨ ¬s |
| F | F | F | F | V | V | V | F | V | F | F | p ∨ q ∨ r ∨ s |

FNC: (¬p ∨ ¬q ∨ ¬r ∨ ¬s) ∧ (¬p ∨ ¬q ∨ r ∨ ¬s) ∧ (p ∨ q ∨ r ∨ ¬s) ∧ (p ∨ q ∨ r ∨ s)

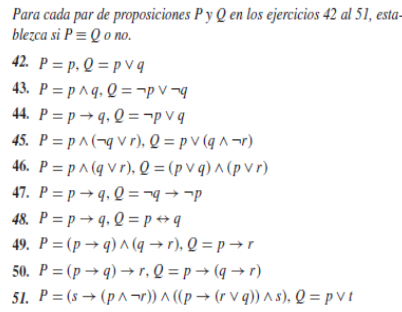
(¬p∨¬q∨¬r∨¬s) ∧(¬p∨¬q∨r∨¬s) ∧(p∨q∨r∨¬s) ∧ (p∨q∨r∨s)

Forma Normal Disyuntiva (FND)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| p | q | r | s | ¬s | ¬p | 1.(p ↔ q) | (q ∨ r) | (¬p ∨ ¬s) | 2. [(q ∨ r) ∧ (¬p ∨ ¬s)] | 1 → 2 |  |
| V | V | V | V | F | F | V | V | F | F | F |  |
| V | V | V | F | V | F | V | V | V | V | V | p ∧ q ∧ r ∧ ¬s |
| V | V | F | V | F | F | V | V | F | F | F |  |
| V | V | F | F | V | F | V | V | V | V | V | p ∧ q ∧ ¬r ∧ ¬s |
| V | F | V | V | F | F | F | V | F | F | V | p ∧ ¬q ∧ r ∧ s |
| V | F | V | F | V | F | F | V | V | V | V | p ∧ ¬q ∧ r ∧ ¬s |
| V | F | F | V | F | F | F | F | F | F | V | p ∧ ¬q ∧ ¬r ∧ s |
| V | F | F | F | V | F | F | F | V | F | V | p ∧ ¬q ∧ ¬r ∧ ¬s |
| F | V | V | V | F | V | F | V | V | V | V | ¬p ∧ q ∧ r ∧ s |
| F | V | V | F | V | V | F | V | V | V | V | ¬p ∧ q ∧ r ∧ ¬s |
| F | V | F | V | F | V | F | V | V | V | V | ¬p ∧ q ∧ ¬r ∧ s |
| F | V | F | F | V | V | F | V | V | V | V | ¬p ∧ q ∧ ¬r ∧ ¬s |
| F | F | V | V | F | V | V | V | V | V | V | ¬p ∧ ¬q ∧ r ∧ s |
| F | F | V | F | V | V | V | V | V | V | V | ¬p ∧ ¬q ∧ r ∧ ¬s |
| F | F | F | V | F | V | V | F | V | F | F |  |
| F | F | F | F | V | V | V | F | V | F | F |  |

FND: (¬p ∧ ¬q ∧ r ∧ ¬s) ∨ (¬p ∧ ¬q ∧ r ∧ s) ∨ (¬p ∧ q ∧ ¬r ∧ ¬s) ∨ (¬p ∧ q ∧ ¬r ∧ s) ∨ (¬p ∧ q ∧ r ∧ ¬s) ∨ (¬p ∧ q ∧ r ∧ s) ∨ (p ∧ ¬q ∧ ¬r ∧ ¬s) ∨ (p ∧ ¬q ∧ ¬r ∧ s) ∨ (p ∧ ¬q ∧ r ∧ ¬s) ∨ (p ∧ ¬q ∧ r ∧ s) ∨ (p ∧ q ∧ ¬r ∧ ¬s) ∨ (p ∧ q ∧ r ∧ ¬s)

¬p¬qr¬s ∨ ¬p¬qrs ∨ ¬pq¬r¬s ∨ ¬pq¬rs ∨ ¬pqr¬s ∨ ¬pqrs ∨ p¬q¬r¬s ∨ p¬q¬rs ∨ p¬qr¬s ∨ p¬qrs ∨ pq¬r¬s ∨ pqr¬s



|  |  |  |
| --- | --- | --- |
| P | q | P ∨ q |
| V | V | v |
| V | F | v |
| F | V | v |
| F | F | f |



|  |
| --- |
| P |
| V |
| F |

≡

Es falso.



|  |  |  |
| --- | --- | --- |
| P | q | P ∧ q |
| V | V | v |
| V | F | F |
| F | V | F |
| F | F | f |

|  |  |  |
| --- | --- | --- |
| ¬P | ¬q | ¬P ∨ ¬q |
| f | f | F |
| f | v | V |
| v | f | V |
| v | v | v |

|  |  |  |
| --- | --- | --- |
| P | q | ¬P ∨ ¬q |
| V | V | V |
| v | f | V |
| f | V | V |
| f | F | f |

≡

Es falso



|  |  |  |
| --- | --- | --- |
| P | q | P → q |
| V | V | v |
| V | F | f |
| F | V | V |
| F | F | v |

|  |  |  |  |
| --- | --- | --- | --- |
| P | ¬P | q | ¬P ∨ q |
| V | F | V | V |
| V | F | F | F |
| F | V | V | V |
| F | V | F | v |

≡

Si son equivalentes