Texto

Descripción generada automáticamente con confianza media

a)

|  |
| --- |
| p |
| T |

b)

|  |  |  |
| --- | --- | --- |
| p | r | p ≡ r |
| F | F | T |
| F | T | F |
| T | F | F |
| T | T | T |

c)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| p | q | r | (¬q) | (p → (¬q)) | ((p → (¬q)) → r) |
| F | F | F | T | T | F |
| F | F | T | T | T | F |
| F | T | F | F | T | T |
| F | T | T | F | T | T |
| T | F | F | T | T | F |
| T | F | T | T | T | F |
| T | T | F | F | F | T |
| T | T | T | F | F | T |

d)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| p | q | (¬p) | (¬q) | (p → q) | ((¬p) → (¬q)) | ((p → q) V ((¬p) → (¬q))) |
| F | F | T | T | T | T | T |
| F | T | T | F | T | F | T |
| T | F | F | T | F | T | T |
| T | T | F | F | T | T | T |

e)

|  |  |  |  |
| --- | --- | --- | --- |
| p | q | (q → p) | (p → (q → p)) |
| F | F | T | T |
| F | T | T | T |
| T | F | F | F |
| T | T | T | T |

f)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| p | q | r | (p V r) | (p → q) | (p V r) Ʌ (p → q) |
| F | F | F | F | T | F |
| F | F | T | T | T | T |
| F | T | F | F | T | F |
| F | T | T | T | T | T |
| T | F | F | T | F | F |
| T | F | T | T | F | F |
| T | T | F | T | T | T |
| T | T | T | T | T | T |

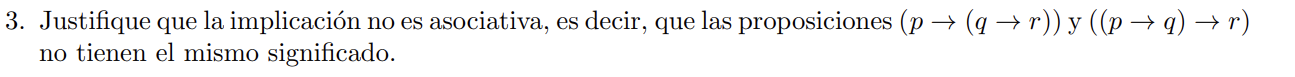
g)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| p | q | r | s | (p V s) | (r Ʌ (p V s)) | (r → (r Ʌ (p V s))) | (¬(r → (r Ʌ (p V s)))) | (p → q) | (r Ʌ (¬r)) |
| F | F | F | F | F | F | T | F | T | F |
| F | F | F | T | T | F | T | F | T | F |
| F | F | T | F | F | F | F | T | T | F |
| F | F | T | T | T | T | T | F | T | F |
| F | T | F | F | F | F | T | F | T | F |
| F | T | F | T | T | F | T | F | T | F |
| F | T | T | F | F | F | F | T | T | F |
| F | T | T | T | T | T | T | F | T | F |
| T | F | F | F | T | F | T | F | F | F |
| T | F | F | T | T | F | T | F | F | F |
| T | F | T | F | T | T | T | F | F | F |
| T | F | T | T | T | T | T | F | F | F |
| T | T | F | F | T | F | T | F | T | F |
| T | T | F | T | T | F | T | F | T | F |
| T | T | T | F | T | T | T | F | T | F |
| T | T | T | T | T | T | T | F | T | F |

|  |  |  |
| --- | --- | --- |
| (p → q) V (r Ʌ (¬r)) | (¬( p → q) V (r Ʌ (¬r))) | (¬(r → (r Ʌ (p V s)))) ≡ (¬( p → q) V (r Ʌ (¬r))) |
| T | F | T |
| T | F | T |
| T | F | F |
| T | F | T |
| T | F | T |
| T | F | T |
| T | F | T |
| T | F | T |
| F | T | F |
| F | T | F |
| F | T | F |
| T | T | F |
| T | T | F |
| T | T | F |
| T | T | F |
| T | T | F |



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| p | q | r | (q V r) | (p V (q V r)) | (p V q) | ((p V q) V r) | ((p V (q V r)) ≡ ((p V q) V r)) |
| F | F | F | F | F | F | F | T |
| F | F | T | T | T | F | T | T |
| F | T | F | T | T | T | T | T |
| F | T | T | T | T | T | T | T |
| T | F | F | F | T | T | T | T |
| T | F | T | T | T | T | T | T |
| T | T | F | T | T | T | T | T |
| T | T | T | T | T | T | T | T |



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| p | q | r | (q → r) | (p → (q → r)) | (p → q) | ((p → q) → r) | ((p → (q → r)) ((p → q) → r)) |
| F | F | F | T | T | T | F | T |
| F | F | T | T | T | T | T | F |
| F | T | F | F | T | T | F | T |
| F | T | T | T | T | T | T | F |
| T | F | F | T | T | F | T | F |
| T | F | T | T | T | T | T | F |
| T | T | F | F | F | F | T | T |
| T | T | T | T | T | T | T | F |



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| p | q | r | (p → q) | (¬true) | ((p → q) Ʌ (¬true)) | (r V q) | (((p → q) Ʌ (¬true)) ≡ (r V q)) |
| F | F | F | T | F | F | F | T |
| F | F | T | T | F | F | T | F |
| F | T | F | T | F | F | T | F |
| F | T | T | T | F | F | T | F |
| T | F | F | F | F | F | F | T |
| T | F | T | T | F | F | T | F |
| T | T | F | F | F | F | T | F |
| T | T | T | T | F | F | T | F |

Interfaz de usuario gráfica, Texto

Descripción generada automáticamente

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| p | q | H\* | (¬(p V q)) | (H\* ≡ ¬(p V q)) |
| F | F | T | T | T |
| F | T | F | F | T |
| T | F | F | F | T |
| T | T | F | F | T |

Así H\* = ¬(p V q)

|  |  |  |  |
| --- | --- | --- | --- |
| p | (¬p) | (p → (H\*) | ((¬p) ≡ (p → (H\*) |
| F | T | T | T |
| T | F | F | T |
| F | T | T | T |
| T | F | F | T |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| p | q | (¬(p Ʌ q)) | H\* | (¬((¬(p Ʌ q)) V H\*)) | (p Ʌ q) | ((¬((¬(p Ʌ q)) V H\*)) ≡ (p Ʌ q)) |
| F | F | T | T | F | F | T |
| T | F | T | F | F | F | T |
| F | T | T | F | F | F | T |
| T | T | F | F | T | T | T |

H\*  es asociativo

((p \* (q \* r)) ≡ ((p \* q) \* r))

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| p | q | r | (q \* r) | (p \* (q \* r)) | (p \* q) | ((p \* q) \* r) | ((p \* (q \* r)) ≡ ((p \* q) \* r)) |
| F | F | F | T | F | T | F | T |
| F | F | T | F | T | T | F | F |
| F | T | F | T | F | F | T | F |
| F | T | T | F | T | F | F | F |
| T | F | F | F | F | F | T | F |
| T | F | T | F | F | F | F | T |
| T | T | F | F | F | F | T | F |
| T | T | T | F | F | F | F | T |

H\*  es conmutativo

(p \* q) ≡ (q \* p)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| p | q | (p \* q) | (q \* p) | (p \* q) ≡ (q \* p) |
| F | F | T | T | T |
| F | T | F | F | T |
| T | F | F | F | T |
| T | T | F | F | T |

Interfaz de usuario gráfica, Texto, Aplicación

Descripción generada automáticamente

|  |  |  |  |
| --- | --- | --- | --- |
| p | q | (¬(p ← q)) | H\* |
| F | F | F | F |
| F | T | T | T |
| T | F | F | F |
| T | T | F | F |

Así H\* es (¬(p ← q))

H\* es asociativo

((p \* (q \* r)) ≡ ((p \* q) \* r))

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| p | q | r | (q \* r) | (p \* (q \* r)) | (p \* q) | ((p \* q) \* r) | ((p \* (q \* r)) ≡ ((p \* q) \* r)) |
| F | F | F | F | F | F | F | T |
| F | F | T | T | T | F | T | T |
| F | T | F | F | F | T | F | T |
| F | T | T | F | F | T | F | T |
| T | F | F | F | F | F | F | T |
| T | F | T | T | F | F | T | F |
| T | T | F | F | F | F | F | T |
| T | T | T | F | F | F | T | F |

H\* es transitivo

(((p \* q) Ʌ (q \* r)) ≡ (p \* r))

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| p | q | r | (q \* r) | (p \* q) | (p \* r) | ((p \* q) Ʌ (q \* r)) | (((p \* q) Ʌ (q \* r)) ≡ (p \* r)) |
| F | F | F | F | F | F | F | T |
| F | F | T | T | F | T | F | F |
| F | T | F | F | T | F | F | T |
| F | T | T | F | T | T | F | F |
| T | F | F | F | F | F | F | T |
| T | F | T | T | F | F | F | T |
| T | T | F | F | F | F | F | T |
| T | T | T | F | F | F | F | T |

Gráfico, Diagrama, Esquemático

Descripción generada automáticamente

v(p) = w(p)

v(q) = w(q)

Como las variables proposicionales p y q tienen el mismo valor tanto en v como en w y ambas valuaciones por metatorema 2.21, se concluye que 



Hay 2 opciones para la valuación de Φ, que sea T o F, por el meta teorema 2.20, así se presentan 2 casos

v(Φ) = F v(Φ) = T

v(¬Φ) = T v(¬Φ) = F

v(Φ) v(¬Φ) v(Φ) v(¬Φ)