4)Construir as Tabelas Verdades das proposições abaixo:

a)      (p → q) → (r ^ ~s)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| p | q | r | s | ~s | (p → q) | (r ^ ~s) | (p → q) → (r ^ ~s) |
| V | V | V | V | F | V | F | F |
| V | V | V | F | V | V | V | V |
| V | V | F | V | F | V | F | F |
| V | V | F | F | V | V | F | F |
| V | F | V | V | F | F | F | V |
| V | F | V | F | V | F | V | V |
| V | F | F | V | F | F | F | V |
| V | F | F | F | V | F | F | V |
| F | V | V | V | F | V | F | F |
| F | V | V | F | V | V | V | V |
| F | V | F | V | F | V | F | F |
| F | V | F | F | V | V | F | F |
| F | F | V | V | F | V | F | F |
| F | F | V | F | V | V | V | V |
| F | F | F | V | F | V | F | F |
| F | F | F | F | V | V | F | F |

b)      ~p → (q → r)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| p | q | r | ~p | (q → r) | ~p → (q → r) |
| V | V | V | F | V | V |
| V | V | F | F | F | V |
| V | F | V | F | V | V |
| V | F | F | F | V | V |
| F | V | V | V | V | V |
| F | V | F | V | F | F |
| F | F | V | V | V | V |
| F | F | F | V | V | V |

c)      (~p ^ s) → (q v ~r)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| p | q | r | s | ~p | ~r | (~p ^ s) | (q v ~r) | (~p ^ s) → (q v ~r) |
| V | V | V | V | F | F | F | V | V |
| V | V | V | F | F | F | F | V | V |
| V | V | F | V | F | V | F | V | V |
| V | V | F | F | F | V | F | V | V |
| V | F | V | V | F | F | F | F | V |
| V | F | V | F | F | F | F | F | V |
| V | F | F | V | F | V | F | V | V |
| V | F | F | F | F | V | F | V | V |
| F | V | V | V | V | F | V | V | V |
| F | V | V | F | V | F | F | V | V |
| F | V | F | V | V | V | V | V | V |
| F | V | F | F | V | V | F | V | V |
| F | F | V | V | V | F | V | F | F |
| F | F | V | F | V | F | F | F | V |
| F | F | F | V | V | V | V | V | V |
| F | F | F | F | V | V | F | V | V |

d)     ((p ^ q )→r) v ((~p ↔ s) v ~r)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| p | q | r | s | ~p | ~r | (p^q) | ((p^q)→r) | (~p↔s) | ((~p↔s) v~r) | ((p^q)→r)v((~p↔s)v~r) |
| V | V | V | V | F | F | V | V | F | F | V |
| V | V | V | F | F | F | V | V | V | V | V |
| V | V | F | V | F | V | V | F | f | V | V |
| V | V | F | F | F | V | V | F | V | V | V |
| V | F | V | V | F | F | F | V | F | F | V |
| V | F | V | F | F | F | F | V | V | V | V |
| V | F | F | V | F | V | F | F | F | V | V |
| V | F | F | F | F | V | F | F | V | V | V |
| F | V | V | V | V | F | F | V | V | V | V |
| F | V | V | F | V | F | F | V | F | F | V |
| F | V | F | V | V | V | F | V | V | V | V |
| F | V | F | F | V | V | F | V | F | V | V |
| F | F | V | V | V | F | F | V | V | V | V |
| F | F | V | F | V | F | F | V | F | F | V |
| F | F | F | V | V | V | F | V | V | V | V |
| F | F | F | F | V | V | F | V | F | V | V |