1-

a)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| p | q | (p **→** q) | (q **→** p) | (p **→** q) ∧ (q **→** p) |
| 0 | 0 | 1 | 1 | 1 |
| 0 | 1 | 1 | 0 | 0 |
| 1 | 0 | 0 | 1 | 0 |
| 1 | 1 | 1 | 1 | 1 |

b)

|  |  |  |  |
| --- | --- | --- | --- |
| p | q | ¬p | ¬p ∨ q |
| 0 | 0 | 1 | 1 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 |
| 1 | 1 | 0 | 1 |

c)

|  |  |  |  |
| --- | --- | --- | --- |
| p | q | ¬q | (p ∧ ¬q) |
| 0 | 0 | 1 | 0 |
| 0 | 1 | 0 | 0 |
| 1 | 0 | 1 | 1 |
| 1 | 1 | 0 | 0 |

d)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| p | q | (p ∨ q) | (p ∧ q) | (p ∨ q) ∧ (p ∧ q) |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 1 | 1 | 0 | 0 |
| 1 | 0 | 1 | 0 | 0 |
| 1 | 1 | 1 | 1 | 1 |

e)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| p | q | ¬q | ¬p | (¬q **→** ¬p) | (p **→** q) | (p **→** q) ↔ (¬q **→** ¬p) |
| 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| 0 | 1 | 0 | 1 | 0 | 1 | 0 |
| 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 1 | 1 | 0 | 0 | 1 | 1 | 1 |

f)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| p | q | r | ¬q | (p ∧ ¬q) | ¬r | ((p ∧ ¬q) **→** ¬r) | ¬((p ∧ ¬q) **→** ¬r) |
| 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
| 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 |
| 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |

g)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| p | q | ¬p | ¬q | (p ∧ ¬p) | (q ∧ ¬q) | (p ∧ ¬p) **→** (q ∧ ¬q) |
| 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 1 | 1 | 0 | 0 | 0 | 0 | 1 |

h)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| p | q | ¬p | (p **→** q) | ( ¬p ∨ q) | (p **→** q) ∧ ( ¬p ∨ q) |
| 0 | 0 | 1 | 1 | 1 | 1 |
| 0 | 1 | 1 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 0 | 1 | 1 | 1 |

2-

Carlos é argentino ou João é brasileiro e Maria não é portuguesa.

a ∨ b ^ ¬ c

**Logo, alternativa “b”.**

3-

Duda é uma pug e Tody não é um vira-lata.

d ^ ¬ t

**Logo, alternativa “c”.**

4-

a)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A | B | ¬A | ¬B | ¬A v ¬B |
| 1 | 1 | 0 | 0 | 0 |

Logo, é Falso.

b)

|  |  |  |  |
| --- | --- | --- | --- |
| A | B | ¬B | A v ¬B |
| 1 | 1 | 0 | 1 |

Logo, é Verdadeiro.

c) **Alternativa Correta.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| A | B | C | ¬A | (B → C) | ¬A ^ (B → C) |
| 1 | 1 | 0 | 0 | 0 | 0 |

Logo, é Falso.

d)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| A | B | ¬A | ¬B | (¬B → ¬A) | ¬A ^ (¬B → ¬A) |
| 1 | 1 | 0 | 0 | 1 | 0 |

Logo, é Falso.

e)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| A | B | C | D | C v D | A ^ B | C v D → A ^ B |
| 1 | 1 | 0 | 0 | 0 | 1 | 1 |

Logo, é Verdadeiro

5-

**Alternativa “c”.**

6-

a) Correto.

b) Correto.

c) Correto.

**d) Falso.**

e) Correto.

7-

p: Safra de grãos ser abundante.

q: Chover.

p → q

**Logo, alternativa “d”.**

Aluno: Lucas de Lucena Siqueira