# TALLER 2

# GEIDER BARRIOS CHAVERRA

**(1045.493.032)**

# YANETH MARCELA TEHERÁN

**(39.314.970**)

# MARÍA DEL SOCORRO RIVAS MARTÍNEZ

# (1045.499.854)

# LÓGICA MATEMÁTICA

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# LUIS FELIPE HERNÁNDEZ

# UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA (UNAD)

# CEAD (TURBO ANTIOQUIA.)

TALLER DE LOGICA

1. Dadas las siguientes proposiciones:

P = El sol es grande

Q = Colombia no es linda

R = El presidente es inteligente.

Escribir en forma literal las siguientes proposiciones:

A. 

B. 

C. 

1. Determina el valor de verdad de las siguientes proposiciones y construye el circuito lógico correspondiente.

a. 

b. 

c. 

d. 

e. 

f. 

g. 

1. Un enamorado le dice a su novia: “si me gano la lotería, entonces te compro una casa y si no me la gano, entonces, nos casamos en diciembre”.
2. Escribe simbólicamente la expresión anterior
3. Construye una tabla de verdad para verificar su es tautología.

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1. Si el presidente se rinde y las fuerzas oscuras proceden, entonces, hay guerras y pobreza, o si el presidente no se rinde, entonces, las fuerzas oscuras no proceden y no hay pobreza.
2. Escribe simbólicamente la expresión anterior
3. Construye una tabla de verdad para verificar su es tautología.

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SOLUCIÓN

1. A. 

El sol es grande si y entonces colombia no es linda y el presidente es inteligente

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **P** | **Q** | **R** |  |  |
| V | V | V | V | V |
| V | V | F | V | F |
| V | F | V | F | F |
| V | F | F | F | F |
| F | V | V | V | V |
| F | V | F | V | F |
| F | F | V | V | V |
| F | F | F | V | F |

B. 

El sol no es grande y colombia es linda si y solo si el presiente es inteligente

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **P** | **Q** | **R** |  |  |  |  |
| V | V | V | F | F | F | F |
| V | V | F | F | F | V | F |
| V | F | V | F | V | V | F |
| V | F | F | F | V | F | F |
| F | V | V | V | F | V | V |
| F | V | F | V | F | V | V |
| F | F | V | V | V | V | V |
| F | F | F | V | V | F | F |

C. 

El presidente no es inteligente si y solo si el sol no es grande o colombia es linda

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| P | Q | R |  |  |  | () |  |
| V | V | V | F | F | F | F | V |
| V | V | F | F | F | V | F | F |
| V | F | V | F | V | F | V | F |
| V | F | F | F | V | V | V | V |
| F | V | V | V | F | F | V | F |
| F | V | F | V | F | V | V | V |
| F | F | V | V | V | F | V | F |
| F | F | F | V | V | V | V | V |

2.A) 

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| P | Q | R |  |  |  |  |  |  |  |
| V | V | V | F | F | V | F | V | F | F |
| V | V | F | F | V | V | F | V | F | F |
| V | F | V | F | F | F | F | F | V | V |
| V | F | F | F | V | F | F | V | F | V |
| F | V | V | V | F | F | V | V | V | V |
| F | V | F | V | V | F | F | V | F | V |
| F | F | V | V | F | F | V | F | F | V |
| F | F | F | V | V | F | F | V | F | V |

B. 

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| P | Q | R |  |  |
| V | V | V | V | V |
| V | V | F | V | F |
| V | F | V | F | F |
| V | F | F | F | F |
| F | V | V | V | V |
| F | V | F | V | F |
| F | F | V | V | V |
| F | F | F | V | F |

C. 

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| P | Q | R |  |  |  |  |  |
| V | V | V | F | F | F | F | V |
| V | V | F | F | F | V | F | F |
| V | F | V | F | V | F | V | F |
| V | F | F | F | V | V | V | V |
| F | V | V | V | F | F | V | F |
| F | V | F | V | F | V | V | V |
| F | F | V | V | V | F | V | F |
| F | F | F | V | V | V | V | V |

D. 

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

E. 

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

F. 

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

G. 

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

3 A. simbología ()

B) Tabla de verdad

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| P | Q | R |  |  | () | () |
| V | V | V | F | V | v | V |
| V | V | F | F | V | V | V |
| V | F | V | F | F | v | F |
| V | F | F | F | F | V | F |
| F | V | V | V | v | V | V |
| F | V | F | V | V | V | V |
| F | F | V | V | V | V | V |
| F | F | F | V | V | V | V |

c) Al verificar la tabla no presenta tautología.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| P | Q | R |  |  | (P Λ Q) | [(P Λ Q) r] | [(Q)] | [ (P Λ Q) r]  [( Q)] | [ (P Λ Q) r]  [ ( Q)] R |
| V | V | V | F | F | V | V | V | V | V |
| V | V | F | F | V | V | V | V | V | V |
| V | F | V | F | F | F | F | V | V | V |
| V | F | F | F | V | F | V | V | V | V |
| F | V | V | V | F | F | F | F | F | V |
| F | V | F | V | V | F | V | V | V | V |
| F | F | V | V | F | F | F | F | F | V |
| F | F | F | V | V | F | V | v | v | v |

4) A. Simbología [(P Λ Q) r]  [( Q)] R

B) Tabla:

C) Al verificar la tabla presenta una tautología.