Q1

((p ∨ q) ∧ (p → r)) → (q ∨ ¬r)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| P | Q | R | p ∨ q | p → r | ((p ∨ q) ∧ (p → r)) | (q ∨ ¬r) | ((p ∨ q) ∧ (p → r)) → (q ∨ ¬r) |
| 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |
| 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Can ignore rows where q = 1 or r = 0 as no matter what the others are, they will always cause a 1 overall, rows 2 (0,0,1) and 6 (1,0,1) are crucial,

B

No because in row 6, it is 0 overall, meaning it does not imply

2.

N = 2k-1; k > 0

-5(2k-1) = -10k – 5

-10k – 5 = 2L

-5k – 2.5 = L

2.5 is not an integer

-10k – 5 is always odd because any multiple of 10 is even then – 5 is makes it odd

There is no value of k to make -10k – 5 be odd

B

2n2 + n = n3 + 2

-n3 + 2n2 + n – 2 = 0

N(-n2 + 2n + 1) – 2 = 0

Quadratic equation x = 2 non integers

N = 2

2x22 + 2 = 23 + 2 10 = 10

C

N + (n+1) + (n+2) = 3m

3n + 3 = 3m

n+1 = m

n + (n+1) + (n+2) = 3(n+1)

3

(p ∧ q) → r

-( p ∧ q) → -r

Inverse: P ∨ q → -r

Contrapositive: -r → P ∨ q

B