1. s ^ i
2. ∼s ^ ∼i
3. m ^ ∼c
4. S ^ r ^ ∼b
5. ∼ r ^ s ^ b
6. ∼ S ^ r ^ ∼ b
7. ∼r ^ S ^ ∼b
8. R ^ ∼s ^ ∼b
9. A ^ ∼b
10. C ^ b ^ ∼a
11. ∼a ^ ∼c
12. B ^ ∼a ^ ∼c
13. ∼q ^ x ∼y v z ^ ∼x

|  |  |  |  |
| --- | --- | --- | --- |
| P | q | ∼p | ∼p ^ q |
| V | V | F | F |
| V | F | F | F |
| F | V | V | V |
| f | f | v | F |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| p | q | ∼p | ∼q | ∼ (p ^ q) | (p v q) | ∼ (p ^ q) v (p v q) |
| v | V | F | F | F | V | V |
| V | F | F | V | F | V | V |
| F | V | V | F | F | V | V |
| F | F | v | V | V | F | V |