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CSE 512 Artificial Intelligence

Homework #4

**Problem 1**

Step 1 – Convert to CNF

Propositional sentence

Set of premises

Step 2(a) – Use resolution refutation to disprove contradiction of propositional sentence

Disprove:

|  |  |  |
| --- | --- | --- |
| 1 |  | Given |
| 2 |  | **Given** |
| 3 |  | **Given** |
| 4 |  | **Given** |
| 5 |  | **Given** |
| 6 |  | **Negated Propositional Sentence** |
| 7 |  | **4+6** |
| 8 |  | **5+7** |
| 9 |  | **5+8, EOP** |

Step 2(b) – Use same method to disprove contradiction of propositional sentence

Disprove:

|  |  |  |
| --- | --- | --- |
| 1 |  | Given |
| 2 |  | **Given** |
| 3 |  | **Given** |
| 4 |  | **Given** |
| 5 |  | **Given** |
| 6 |  | **Negated Propositional Sentence** |
| 7 |  | **6+2** |
| 8 |  | **6+7** |
| 9 |  | **8+3** |
| 10 |  | **7+9, EOP** |

**Problem 2**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| id | A | B | C | D | Ok |
| 1 | 1 | 0 | 1 | 1 | 0 |
| 2 | 1 | 1 | 0 | 1 | 1 |
| 3 | 1 | 1 | 0 | 0 | 0 |
| 4 | 1 | 1 | 0 | 1 | 1 |
| 5 | 1 | 0 | 0 | 0 | 0 |
| 6 | 0 | 1 | 1 | 1 | 1 |
| 7 | 0 | 1 | 0 | 1 | 1 |
| 8 | 0 | 1 | 0 | 0 | 0 |
| 9 | 0 | 1 | 0 | 1 | 1 |
| 10 | 0 | 0 | 0 | 0 | 0 |

Step 1 – Find row with best ratio…

D appears to be the best choice, however, is not 100%, therefore add another row.

Step 2 – Best ratio with row D…

Since has a 100% ratio, this is a becomes the **first learning rule**. This is also our only learning rule, since we now have 0’s in all rows for our ‘ok’ vector.