

1) Prove 'Snoopy will die'

```
def resolve(kb, query):
```

```
    temp = kb.copy()
```

```
    temp += [negate(query)]
```

```
    steps = dict()
```

```
    for clause in temp:
```

```
        steps[clause] = 'Given'
```

```
    step[negate(query)] = 'Negated Conclusion.'
```

```
    i = 0
```

```
    while i < len(temp):
```

```
        n = len(temp)
```

```
        j = (i+1) % n
```

```
        clauses = []
```

```
        while j != i:
```

```
            term1 = split_terms(temp[i])
```

```
            term2 = split_terms(temp[j])
```

```
            for c in term1:
```

```
                if negate(c) in term2:
```

```
                    t1 = [t for t in term1 if t != c]
```

```
                    t2 = [t for t in term2 if t != negate(c)]
```

```
                    gen = t1 + t2
```

if  $\text{len}(\text{gen}) == 2$ :

if  $\text{gen}[0] \neq \text{negate}(\text{gen}[1])$ :

$\text{clauses} += [F'\{\text{gen}[0]\} \vee \{\text{gen}[1]\}']$

else:

if contradiction (query,  $F'\{\text{gen}[0]\} \vee \{\text{gen}[1]\}'$ ):

temp.append( $F'\{\text{gen}[0]\} \vee \{\text{gen}[1]\}'$ )

$\text{steps}[i] = F'$  Resolved  $\{\text{temp}[i]\}$  and  $\{\text{temp}[i+1]\}$   
to  $\{\text{temp}[i+1]\}$ , which is in turn null.

return steps.

elif  $\text{len}(\text{gen}) == 1$ :

$\text{clauses} += [F'\{\text{gen}[0]\}']$

else

if contradiction (query,  $F'\{\text{terms}[0]\} \vee \{\text{terms}[2][0]\}'$ ):

temp.append( $F'\{\text{terms}[0]\} \vee \{\text{terms}[2][0]\}'$ )

return steps

for clause in clauses:

if clause not in temp and clause  $\neq \text{reverse}(\text{clause})$   
and  $\text{reverse}(\text{clause})$  not in temp:

temp.append(clause)

$\text{steps}[\text{clause}] = F'$  Resolved from  $\{\text{temp}[i]\}$  and  $\{\text{temp}[j]\}$

$j = (j+1) \% n$

$i += 1$

return steps