

(61)

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Relación Unificación y Resolución

$$(1) \{ Q(x, f(y)), Q(f(z), f(a)) \}$$

$$\begin{cases} x = f(z) \\ f(y) = f(a) \Rightarrow a = y \end{cases} \Rightarrow \text{unificable.}$$

$$(2) \{ P(x, g(x, a), f(y)), P(x, g(g(f(y), b), y), f(a)) \}$$

$$\begin{cases} x = x \\ g(x, a) = g(g(f(y), b), y) \Rightarrow x = g(f(y), b) \quad a = y \Rightarrow x = g(f(a), b) \\ f(y) = f(a) \end{cases}$$

Luego unificable

$$(3) \{ Q(x, g(x, y)), Q(y, z), Q(z, g(x, a)) \}$$

$$\begin{cases} x = y = z \\ g(x, y) = z = g(x, a) \Rightarrow y = a \quad x = x \Rightarrow g(x, a) = z \end{cases}$$

Luego unificable.

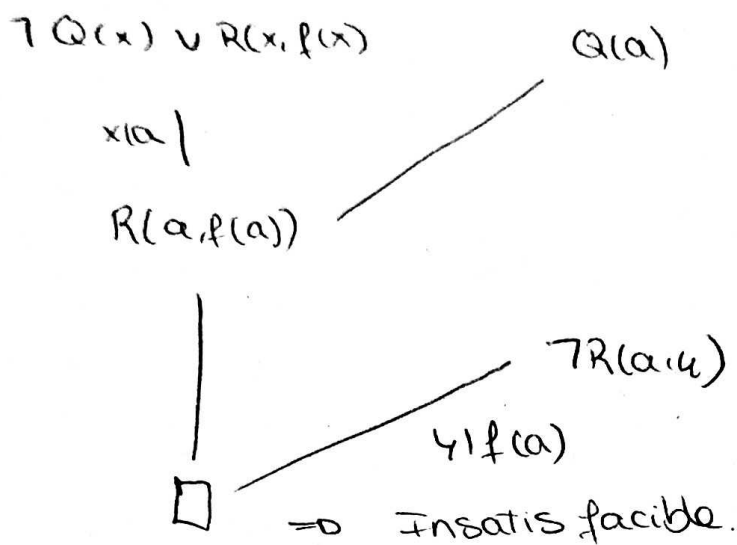
$$(4) \{ R(f(x), g(f(z), y), g(a, f(f(x))))), R(y, g(f(a), f(f(b))), g(z, f(y))) \}$$

$$\begin{cases} f(x) = y \\ g(f(z), y) = g(f(a), f(f(b))) \Rightarrow f(z) = f(a) \quad y = f(f(b)) \\ g(a, f(f(x))) = g(z, f(y)) \Rightarrow a = z \quad f(f(x)) = f(y) \end{cases} \Rightarrow$$

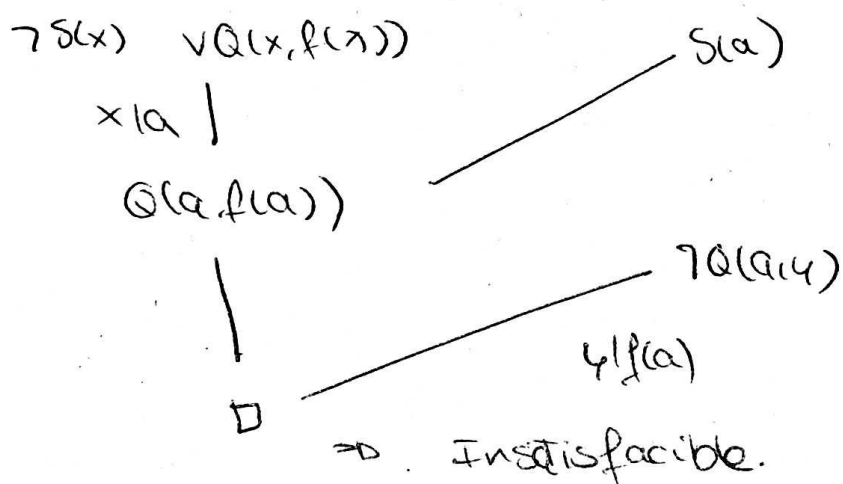
$$\begin{aligned} & \Rightarrow \begin{cases} f(x) = f(f(b)) \Rightarrow y = f(x) \\ y = f(x) \Rightarrow f(b) = x \\ z = a \end{cases} \quad \text{unificable.} \end{aligned}$$

6.2

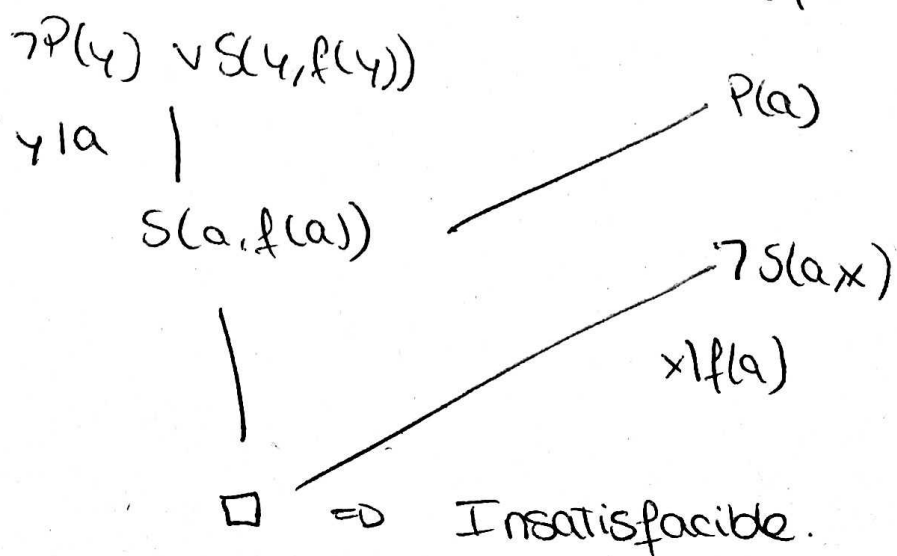
$$1. \{ Q(a), \neg R(a, y), \neg Q(x) \vee R(x, f(x)) \}$$



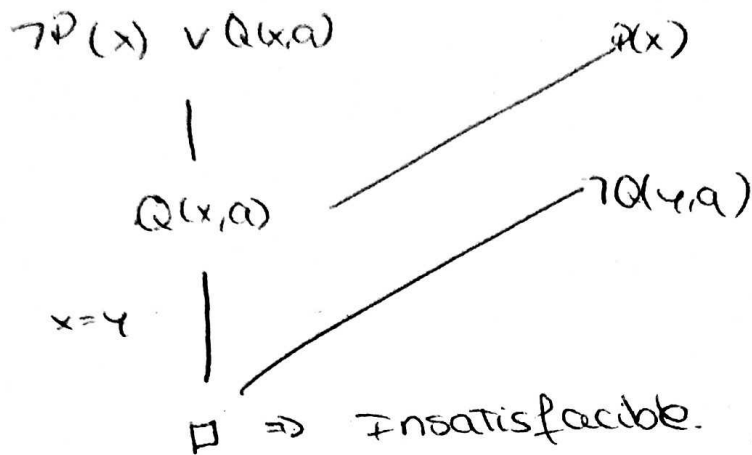
$$2. \{ \neg Q(a, y), \neg S(x) \vee Q(x, f(x)), S(a) \}$$



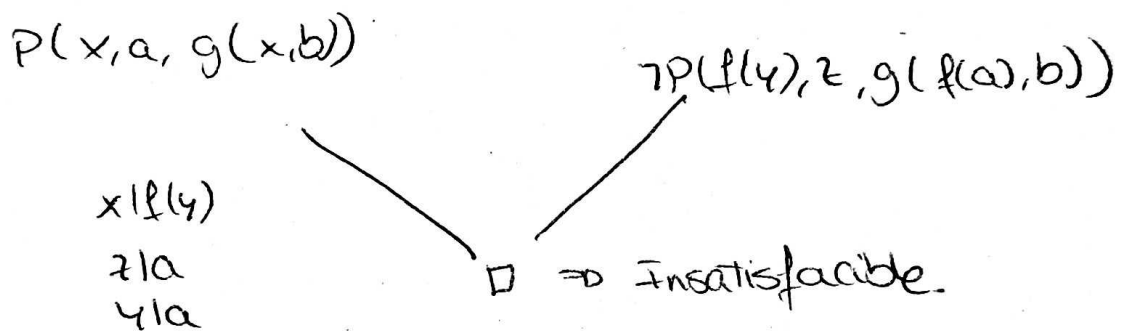
$$3. \{ P(a), \neg S(a, x), \neg P(y) \vee S(y, f(y)) \}$$



$$4. \{P(x), \neg P(x) \vee Q(x,a), \neg Q(y,a)\}$$



$$5. \{P(x, a, g(x,b)), \neg P(f(y), z, g(f(a), b))\}$$



(6.3)

$$\exists x (M(x) \wedge \neg D(x))$$

$$1. \forall y (\neg C(y) \rightarrow \exists x A(x,y))$$

$$2. \forall x [\exists y (\neg C(y) \wedge A(x,y)) \rightarrow M(x)]$$

$$3. \forall x (D(x) \rightarrow M(x))$$

$$4. \forall x [(M(x) \wedge D(x)) \rightarrow \neg \exists y (\neg C(y) \wedge A(x,y))]$$

$$5. \exists x \neg C(x)$$

Negamos la conclusión.

$$\neg \exists x (M(x) \wedge \neg D(x))$$

$$\forall x \neg (M(x) \wedge \neg D(x)) \text{ FNP FNS}$$

$$\forall x (\neg M(x) \vee D(x)) \text{ FNC (1 cláusula).}$$

Transformamos en cláusulas las 5 hipótesis

$$1. \forall y \exists x (\neg C(y) \rightarrow A(x, y)) \text{ FNP}$$

$$\forall y (\neg C(y) \rightarrow A(f(y), y)) \text{ FNS}$$

$$\forall y (C(y) \vee A(f(y), y)) \text{ FNC.}$$

$$2. \forall x \forall y (\neg C(y) \wedge A(x, y) \rightarrow M(x)) \text{ FNP FNS}$$

$$\forall x \forall y (C(y) \vee \neg A(x, y) \vee M(x)) \text{ FNC}$$

$$3. \forall x (D(x) \rightarrow M(x)) \text{ FND FNS}$$

$$\forall x (\neg D(x) \vee M(x)) \text{ FNC}$$

$$4. \forall x \forall y (M(x) \wedge D(x) \rightarrow \neg (\neg C(y) \wedge A(x, y))) \text{ FNP FNS}$$

$$\forall x \forall y (\neg M(x) \vee \neg D(x) \vee C(y) \vee \neg A(x, y)) \text{ FNC.}$$

$$5. \neg C(a) \text{ FNC}$$

$$\{ \neg C(a), \neg M(x) \vee \neg D(x) \vee C(y) \vee \neg A(x, y), \neg D(x) \vee M(x),$$

$$C(y) \vee \neg A(x, y) \vee M(x), C(y) \vee A(f(y), y), \neg M(x) \vee D(x) \}.$$

$$\neg M(x) \vee \neg D(x) \vee C(y) \vee \neg A(x, y)$$

$$\neg M(x) \vee D(y)$$

|

$$\neg M(x) \vee C(y) \vee \neg A(x, y)$$

$$C(y) \vee \neg A(x, y) \vee M(x)$$

|

$$C(y) \vee \neg A(x, y)$$

$$C(y) \vee A(f(y), y)$$

$$x \neq f(y)$$

|

$$C(y)$$

$$\forall a$$

|

$$\neg C(a)$$

⊥