Unir con flechas los términos que unifican entre sí (entre una fila y la otra). Para cada par unificable, exhibir el *mgu* ("most general unifier"). Asumir que a es una constante, X, Y, Z son variables, f y g son símbolos de función, y P y Q predicados.

$P(f(X))$	$P(\mathsf{a})$	$P(Y)$	$Q(X, f(Y))$	$Q(X, f(Z))$	$Q(X, f(\mathsf{a}))$
$P(X)$	$P(f(\mathsf{a}))$	$P(g(Z))$	$Q(f(Y), X)$	$Q(f(Y), f(X))$	$Q(f(Y), Y)$

P(f(X))

mgu { P(f(X)) ≐ P(X) }
= mgu { f(x) ≐ x } decompose
= mgu { x ≐ f(x) } swap
= Falla por Occurs-Check

mgu { P(f(x)) ≐ P(f(a)) }
= mgu { f(x) ≐ f(a) } decompose
= mgu { x ≐ a } decompose
= mgu {} elim {x := a}

S = {x := a}

mgu { P(f(x)) ≐ P(g(z)) }
= mgu { f(x) ≐ g(z) } decompose
= Falla por Clash f ≠ g

P(a)

$mgu\{P(a) \doteq P(x)\}$

$= mgu\{a \doteq x\}$ decompose

$= mgu\{x \doteq a\}$ swap

$= mgu\{\}$ elim $\{x := a\}$

$S = \{x := a\}$

$mgu\{P(a) \doteq P(g(z))\}$

$= mgu\{a \doteq g(z)\}$ decompose

= Falla por Clash $a \neq g$

P(Y)

$mgu\{P(Y) \doteq P(X)\}$
$= mgu\{Y \doteq X\}$ decompose
$= mgu\{\}$ elim $\{Y := X\}$

$S = \{Y := X\}$

$mgu\{P(Y) \doteq P(f(a))\}$
$= mgu\{Y \doteq f(a)\}$ decompose
$= mgu\{\}$ elim $\{Y := f(a)\}$

$S = \{Y := f(a)\}$

$mgu\{P(Y) \doteq P(g(a))\}$
$= mgu\{Y \doteq g(a)\}$ decompose
$= mgu\{\}$ elim $\{Y := g(a)\}$

$S = \{Y := g(a)\}$

$Q(X, F(Y))$

$mgu\{Q(X,F(Y)) \doteq Q(F(Y),X)\}$

$= mgu\{X \doteq F(Y),\ F(Y) \doteq X\}$ decompose

$= mgu\{X \doteq F(Y)\}$ swap

$= mgu\{\}$ elim $\{X := F(Y)\}$

$S = \{X := F(Y)\}$

$mgu\{Q(X,F(Y)) \doteq Q(F(Y),F(X))\}$

$= mgu\{X \doteq F(Y),\ F(Y) \doteq F(X)\}$ decompose Q

$= mgu\{X \doteq F(Y),\ Y \doteq X\}$ decompose f

$= mgu\{X \doteq F(X)\}$ elim $\{Y := X\}$

= Falla por Occurs-Check

$mgu\{Q(X,F(Y)) \doteq Q(F(Y),Y)\}$

$= mgu\{X \doteq F(Y),\ Y \doteq F(Y)\}$ decompose + swap

= Falla por Occurs-Check

$Q(X, F(Z))$

$$
\begin{aligned}
&mgu\{Q(X, F(Z)) \doteq Q(F(Y), X)\} \\
&\quad = mgu\{X \doteq F(Y),\ F(Z) \doteq X\} && \text{decompose } Q \\
&\quad = mgu\{F(Z) \doteq F(Y)\} && \text{elim } \{X := F(Y)\} \\
&\quad = mgu\{Z \doteq Y\} && \text{decompose } F \\
&\quad = mgu\{\} && \text{elim } \{Z := Y\}
\end{aligned}
$$

$$S = \{Z := Y\} \circ \{X := F(Y)\} = \{X := F(Y),\ Z := Y\}$$

$$
\begin{aligned}
&mgu\{Q(X, F(Z)) \doteq Q(F(Y), F(X))\} \\
&\quad = mgu\{X \doteq F(Y),\ F(Z) \doteq F(X)\} && \text{decompose } Q \\
&\quad = mgu\{F(Z) \doteq F(F(X))\} && \text{elim } \{X := F(Y)\} \\
&\quad = mgu\{Z \doteq F(X)\} && \text{decompose } F \\
&\quad = mgu\{\} && \text{elim } \{Z := F(X)\}
\end{aligned}
$$

$$S = \{Z := F(X)\} \circ \{X := F(Y)\} = \{X := F(Y),\ Z := F(X)\}$$

$$
\begin{aligned}
&mgu\{Q(X, F(Z)) \doteq Q(F(Y), Y)\} \\
&\quad = mgu\{X \doteq F(Y),\ F(Z) \doteq Y\} && \text{decompose } Q \\
&\quad = mgu\{F(Z) \doteq Y\} && \text{elim } \{X := F(Y)\} \\
&\quad = mgu\{Y \doteq F(Z)\} && \text{swap} \\
&\quad = mgu\{\} && \text{elim } \{Y := F(Z)\}
\end{aligned}
$$

$$S = \{Y := F(Z)\} \circ \{X := F(Y)\} = \{X := F(F(Z)),\ Y := F(Z)\}$$

$Q(X, F(a))$

$mgu\ \{Q(X, F(a)) \doteq Q(F(Y), X)\}$

$= mgu\ \{X \doteq F(Y),\ F(a) \doteq X\}$	decompose Q
$= mgu\ \{F(a) \doteq F(Y)\}$	elim $\{X := F(Y)\}$
$= mgu\ \{a \doteq Y\}$	decompose F
$= mgu\ \{Y \doteq a\}$	swap
$= mgu\ \{\}$	elim $\{Y := a\}$

$$S = \{Y := a\} \circ \{X := F(Y)\} = \{X := F(a),\ Y := a\}$$

Los otros 2 también unifican pero me cansé.