PCP $((ab, a), (a, ab))$

$v := (ab, a)$ $\quad u := (a, ab)$

1	ab	a
~~12~~	~~abab~~	~~aa~~
~~12~~	~~aba~~	~~aab~~
~~2~~	~~a~~	~~ab~~

No solution

identify g_a with a

$g_a(g_b(x)) \triangleq a(b(x))$

$$E = \{ f_R(a(b(x)), a(y)) = f_R(x, y)$$

$$f_R(a(x), a(b(y))) = f_R(x, y)$$

$$f_R(a(x), a(x)) = c$$

$$f_v(a(x), b(x)) = c$$

$$f_v(b(x), b(x)) = c \quad f_v(c, c) = d \}$$

$c \approx d$

$$f_R(a(b(x)), a(y)) \to f_R(x, y)$$

$$\sigma = \{ x' \to b(x), \ y \to b(y') \} \quad f_R(a(x'), a(b(y'))) \to f_R(x', y')$$

$$f_R(x, b(y')) \leftarrow f_R(b(x), y') \quad f_R$$

$$f_R(b(y), y) \longrightarrow c \quad f_R(y, b(y)) \to c$$

KBC on ground E_0?

(i) $(E_0, \emptyset) \Longrightarrow^{*}_{KBC} (E_i, R_i)$

E_i ground, R_i ground

(ii) for a ground total ordering equations are always orientable

KBO, LPO ✓

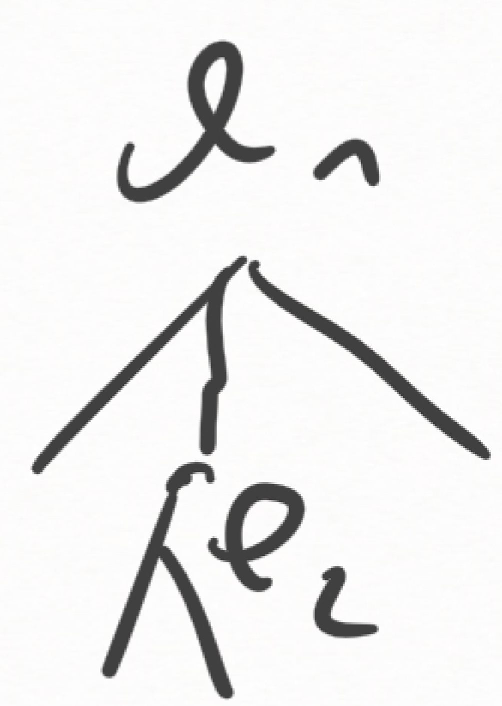
(iii) Termination?? <u>Yes</u> with exhaustive simplification

$E = \{ g(b) = g(a),\ f(g(b)) = g(a) \}$

$l_1 \to r_1$ is reduced

$l_2 \to r_2$

$l_1 > r_1$



$\geq r_1$, $l_1 > l_1[r_2]$

all critical pairs are bounded by the largest l_j (t_i) KBO ✓ finitely many such terms

$CP = O(n^3)$

<u>YES</u> $O(n^2)$