

Exercises

Exercise 1. Let

$$\theta_1 = [X/f(Y, 3), Y/g(Z), Z/h(X)]$$

$$\theta_2 = [X/f(Z), Y/g(X)]$$

$$t_1 = h(X)$$

$$t_2 = m(Y, n(X, Z))$$

Calculate the following:

(a) $\theta_1(t_1)$

(b) $\theta_2(t_1)$

(c) $\theta_1(t_2)$

(d) $\theta_2(t_2)$

(e) $\theta_1 \circ \theta_2$

(f) $\theta_2 \circ \theta_1$

(g) $\theta_2 \circ \theta_2$ (this is not a typo, it is θ_2 composed with θ_2)

(h) $\theta_1 \circ \theta_1$

Solutions are on the next page

Solutions

Exercise 1

(a) $\theta_1(t_1) = h(f(Y, 3))$

(b) $\theta_2(t_1) = h(f(Z))$

(c) $\theta_1(t_2) = m(g(Z), n(f(Y, 3), h(X)))$

(d) $\theta_2(t_2) = m(g(X), n(f(Z), Z))$

(e) $\theta_1 \circ \theta_2 = [X/f(g(X), 3), Y/g(Z), Z/h(f(Z))]$

(f) $\theta_2 \circ \theta_1 = [X/f(h(X)), Y/g(f(Y, 3)), Z/h(X)]$

(g) $\theta_2 \circ \theta_2 = [X/f(Z), Y/g(f(Z))]$

(h) $\theta_1 \circ \theta_1 = [X/f(g(Z), 3), Y/g(h(X)), Z/h(f(Y, 3))]$