

1 Questão 2.

1.

A equação da função exponencial:

$$Exp(x, y) = \overbrace{x + \dots + x}^y$$

$$f(A) = B^A = Exp(B, A)$$

$$Exp(x, 0) = 1$$

$$Exp(x, y + 1) = Exp(x, y) * x$$

Logo:

$$Exp(x, 0) = Sucessor(z(x)) = f(x)$$

$$Exp(x, y + 1) = g(x, y, Exp(x, y)) = multi(u_3^3(x_1, x_2, x_3), u_1^3(x_1, x_2, x_3))$$

Nesse caso:

$$g(x_1, x_2, x_3) = multi(u_3^3(x_1, x_2, x_3), u_1^3(x_1, x_2, x_3))$$

2.

$$\begin{aligned} Exp(3, 2) &= multi(u_3^3(3, 1, Exp(3, 1)), u_1^3(3, 1, Exp(3, 1))) \\ &= multi(Exp(3, 1), 3) \\ &= multi((multi(u_3^3(3, 0, Exp(3, 0))), u_1^3(3, 0, Exp(3, 0))), 3) \\ &= multi(multi(Exp(3, 0), 3)3) \\ &= multi(multi(1, 3), 3) \\ &= multi(multi(3, 3)) \\ &= 9 \end{aligned}$$