Hoja de trabajo # 3 **Javier Lopez —— Jorge Guerrero**

Ejercicio #1

$[\sigma(\sigma(\sigma(0)))] + [\sigma(\sigma(\sigma(\sigma(0))))]$
$s(0) = 1$
$\sigma(\sigma(\sigma(0))) + \sigma(\sigma(\sigma(1)))$
$(\sigma(\sigma(\sigma(0))) + \sigma(\sigma(\sigma(1))))$
$(\sigma(\sigma(\sigma(\sigma(0)))] + \sigma(\sigma(1))))$
$(\sigma(\sigma([\sigma(\sigma(\sigma(0)))] + \sigma(1))))$
$(\sigma(\sigma(\sigma([\sigma(\sigma(\sigma(0)))] + 1))))$
$(\sigma(\sigma(\sigma(\sigma(\sigma(\sigma(0 + 1)))))))$
$(\sigma(\sigma(\sigma(\sigma(\sigma(\sigma(1)))))))) = (\sigma(\sigma(\sigma(\sigma(\sigma(2)))))))$
$(\sigma(\sigma(\sigma(\sigma(\sigma(3)))))) = \sigma(\sigma(\sigma(4))) = \sigma(\sigma(5)) = \sigma(6) = 7$

Ejercicio #2

$$a * b = \begin{cases} a \ / \ b = 1 \\ 0 \ / \ a = 0 \ \vee \ b = 0 \\ b + ((x) * b) \ / \ a = \sigma(x) \end{cases}$$

Ejercicio #3

$(\sigma(\sigma(\sigma(0))) * 0 = a * 0 = 0$
$(\sigma(\sigma(\sigma(0))) * (\sigma(0) = (\sigma(0) = 1 = (\sigma(\sigma(\sigma(0))) * 1 = (\sigma(\sigma(\sigma(0))) = (\sigma(\sigma(1)) = \sigma(2) = 3$
$(\sigma(\sigma(\sigma(0))) * (\sigma(\sigma(0)) = 3 * 2 = 3 + 3 \vee 2 + 2 + 2 = 6$

Ejercicio #4

$a + (\sigma(\sigma(0)) = (\sigma(\sigma(a))$
$(\sigma(a + \sigma(0)) = (\sigma(\sigma(a))$
$(\sigma(\sigma(a + 0)) = (\sigma(\sigma(a))$
$(\sigma(\sigma(a)) = (\sigma(\sigma(a))$

$a * b = b * a\sigma(a) * b = b * \sigma(a)$
$\sigma(a) + (\sigma(a) * x) = (x * \sigma(a)) + \sigma(a)$
$\sigma((a) + (\sigma(a) * x)) = \sigma((x * \sigma(a)) + \sigma(a))$
$\sigma((a) + (\sigma(a) * x)) = \sigma((a) + (\sigma(a) * x))$
$\sigma(a) + (\sigma(a) * x)) = \sigma(a) + (\sigma(a) * x)$
$(\sigma(a) * b)) = (\sigma(a) * b)$
$a + (a * b) = a + (a * b)$
$a * b = a * b$

$a * (b * c) = (a * b) * c$
$\sigma(a) * (b * c) = (\sigma(a) * b) * c$
$\sigma(a) * (b * c) = ((\sigma(a) + (\sigma(a) * x)) * c)$
$\sigma(a) * (b * c) = ((\sigma(a) * (b)) * c)$
$\sigma(a) * (b * c) = (\sigma(a) * (b) * c)$
$\sigma(a) * (b * c) = (\sigma(a) * b * c)$
$\sigma(a) * (b * c) = \sigma(a) * (b * c)$

$(a + b) * c = (a * c) + (b * c)$

$$(\sigma(x) + b) * c = (\sigma(x) * c) + (b * c)$$
$$(\sigma(x + b) * c) = (\sigma(x) * c) + (b * c)$$
$$((\sigma(x) + b) * c) = (\sigma(x) * c) + (b * c)$$
$$((\sigma(x) * c) + (b * c)) = (\sigma(x) * c) + (b * c)$$
$$(\sigma(x) * c) * +(b * c) = (\sigma(x) * c) + (b * c)$$

$$(\sigma(x) * c + b * c) = (\sigma(x) * c) + (b * c)$$
$$(\sigma(x) * c) + (b * c) = (\sigma(x) * c) + (b * c)$$