$$
\begin{aligned}
sc_A(x) &= \mathbf{1}(\mu w.(S(x,(w)_1,(w)_2,(w)_3) \wedge (w)_2 \in Y)) \\
&= \mathbf{1}(\mu w.(|\chi_S(x,(w)_1,(w)_2,(w)_3) * \chi_Y((w)_2) - 1|))
\end{aligned}
$$

The -1 in this formula serves a specific computational purpose in checking set membership. Here's why it exists:

The formula uses the characteristic functions χS and χY, which return either 0 or 1. When testing if (w)2 ∈ Y, we want:

- If (w)2 ∈ Y: χS(x,(w)1,(w)2,(w)3) *χY((w)2) = 1* 1 = 1
- If (w)2 ∉ Y: χS(x,(w)1,(w)2,(w)3) *χY((w)2) = 1* 0 = 0

The -1 operation combined with the absolute value (|...|) transforms this result:

- When result is 1: |1 - 1| = 0, causing μw to continue searching
- When result is 0: |0 - 1| = 1, causing μw to stop searching

This creates a mechanism where the minimalization operator μw continues until it finds a tuple (w)1,(w)2,(w)3 where both:

1. The program halts (S predicate)
2. The output is in set Y (χY function)

The -1 operation is therefore essential for implementing this search behavior through minimalization.