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

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 $(w)2 \in Y$, we want:

- If $(w)2 \in Y$: $\chi S(x,(w)1,(w)2,(w)3) * \chi Y((w)2) = 1 * 1 = 1$
- If $(w)2 \notin Y$: $\chi S(x,(w)1,(w)2,(w)3) * \chi Y((w)2) = 1 * 0 = 0$

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.