PROOF OF FORMULA 3.241.6

$$G(x) := \int_a^b \operatorname{sign}\left[\frac{x}{c} - \left(\frac{b-u}{b-a}\right)^p\right] du = (b-a)F\left[(x/c)^{1/p}\right]$$

where

$$F(x) = \int_0^1 \operatorname{sign}(x-t)\, dt.$$

The change of variable $t = (b-u)/(b-a)$ and the observation that

$$\operatorname{sign}(a^p - t^p) = \operatorname{sign}(a-t)$$

give the result.