2, page 470, solution 32.41: The final answer is OK.
However, all of the 100s should be 110.

$$H(x) = \int_0^x h(t)\ dt = \int_0^x 2/(110 - t)\ dt = -2\{\ln(110 - x) - \ln(110)\}.$$

$S(x) = \exp[-H(t)] = \{(110 - x)/110\}^2 = (1 - x/110)^2$, for $0 \le x < 110$.

$$e(30) = \int_{30}^{110} S(t)\ dt\ /\ S(30) = \int_{30}^{110} (1 - x/110)^2\ dt\ /\ (1 - 30/110)^2$$

$= (110/3)(1 - 30/110)^3 / (1 - 30/110)^2 = (110 - 30)/3 =$ **26.67**.

Comment: Generalized DeMoivre's Law with $\omega = 110$ and $\alpha = 2$. $\mu(x) = \alpha/(\omega - x)$, $0 \le x < \omega$.
$e(x) = (\omega - x)/(\alpha+1) = (110 - x)/3$.
The remaining lifetime at age 30 is a Beta Distribution with a = 1, b = 2, and $\theta = \omega - 30 = 80$.