We see that it is a remarkable property of the coefficients $\frac{1}{n!}$ in e^x and $\frac{1}{n}$ in $\log x$ that we get $\exp[\log(x)] = x$.

Next look at (7.6)

$$x \stackrel{?}{=} \log[\exp(x)] \Rightarrow$$

$$x \stackrel{?}{=} (-1) \sum_{n=1}^{\infty} [1 - \exp(x)]^n / n \Rightarrow$$

$$x \stackrel{?}{=} (-1) \sum_{n=1}^{\infty} \left[-x - \frac{x^2}{2!} - \frac{x^3}{3!} \cdots \right]^n / n \Rightarrow$$

$$x \stackrel{?}{=} (-1) \left\{ [\ ]^1/1 + [\ ]^2/2 + [\ ]^3/3 + \cdots \right\} \Rightarrow$$

$$x \stackrel{?}{=} (-1) \left\{ \left[-x - \frac{x^2}{2!} + \cdots \right] + \left[-x - \frac{x^2}{2!} + \cdots \right]^2 / 2 + \cdots \right\}$$

$$\Rightarrow x \stackrel{?}{=} (-1) \left\{ -x - \underbrace{\frac{x^2}{2!} + \frac{x^2}{2}}_{\text{cancel}} + \cdots \right\}$$

$\Rightarrow$ $x = x$ + all remaining terms cancel.

Again, this is a remarkable property of the coefficients $\frac{1}{n!}$ and $\frac{1}{n}$.