

$$\begin{aligned}
 \int_0^{\frac{\pi}{4}} \frac{1}{1-\eta\mu x} dx &= \int_0^{\frac{\pi}{4}} \frac{1+\eta\mu x}{(1-\eta\mu x)(1+\eta\mu x)} dx = \int_0^{\frac{\pi}{4}} \frac{1+\eta\mu x}{1-\eta\mu^2 x} dx = \int_0^{\frac{\pi}{4}} \frac{1+\eta\mu x}{\sigma\upsilon\nu^2 x} dx = \\
 &= \int_0^{\frac{\pi}{4}} \frac{1}{\sigma\upsilon\nu^2 x} dx + \int_0^{\frac{\pi}{4}} \frac{\eta\mu x}{\sigma\upsilon\nu^2 x} dx = [\varepsilon\varphi x]_0^{\frac{\pi}{4}} + \left[\frac{1}{\sigma\upsilon\nu x} \right]_0^{\frac{\pi}{4}} = \\
 &= \varepsilon\varphi \frac{\pi}{4} - \varepsilon\varphi 0 + \frac{1}{\sigma\upsilon\nu \frac{\pi}{4}} - \frac{1}{\sigma\upsilon\nu 0} = \cancel{\chi'} + \frac{1}{\frac{\sqrt{2}}{2}} - \cancel{\chi'} = \frac{2}{\sqrt{2}} = \sqrt{2}
 \end{aligned}$$