Let $u = 7\pi t$, so $du = 7\pi\, dt$. When $t = \frac{1}{42}$, $u = \frac{\pi}{6}$; when $t = \frac{1}{14}$, $u = \frac{\pi}{2}$. Thus,
$\int_{1/42}^{1/14} \csc\ 7\pi t\ \cot\ 7\pi t\, dt = \int_{\pi/6}^{\pi/2} \csc u\ \cot u \left(\frac{1}{7\pi}\, du\right)$
$= \frac{1}{7\pi}[-\csc u]_{\pi/6}^{\pi/2} = -\frac{1}{7\pi}(1-2) = \frac{1}{7\pi}$.