31.45

$$\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{x}{\eta\mu^2 x}\,dx = \int_{\frac{\pi}{6}}^{\frac{\pi}{2}} x\left(-\sigma\varphi x\right)' dx = \left[-x\sigma\varphi x\right]_{\frac{\pi}{6}}^{\frac{\pi}{2}} - \int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \left(x\right)'\left(-\sigma\varphi x\right)dx =$$

$$= -\frac{\pi}{2}\sigma\varphi\frac{\pi}{2} + \frac{\pi}{6}\sigma\varphi\frac{\pi}{6} + \int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \sigma\varphi x dx = \frac{\pi\sqrt{3}}{6} + \int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{\sigma\upsilon\nu x}{\eta\mu x}\,dx = \frac{\pi\sqrt{3}}{6} + \left[\ln\left|\eta\mu x\right|\right]_{\frac{\pi}{6}}^{\frac{\pi}{2}} =$$

$$= \frac{\pi\sqrt{3}}{6} + \ln\left|\eta\mu\frac{\pi}{2}\right| - \ln\left|\eta\mu\frac{\pi}{6}\right| = \frac{\pi\sqrt{3}}{6} + \ln\left|\eta\mu\frac{\pi}{2}\right| - \ln\frac{1}{2} = \frac{\pi\sqrt{3}}{6} + \ln 2$$