

$$\int_0^{\infty} \frac{1}{(1+x)\sqrt{x}} dx \rightarrow \begin{cases} u = \sqrt{x} \Rightarrow u^2 = x, & x=0 \rightarrow u=0, & x=\infty \rightarrow u=\infty \\ du = \frac{dx}{2\sqrt{x}} \end{cases}$$

$$\int_0^{\infty} \frac{1}{(1+x)\sqrt{x}} dx = \int_0^{\infty} \frac{2dx}{(1+x)2\sqrt{x}} = \int_0^{\infty} \frac{2}{(1+u^2)} du = 2 \lim_{b \rightarrow \infty} \int_0^b \frac{du}{(1+u^2)} =$$

$$= 2 \lim_{b \rightarrow \infty} \arctg u \Big|_0^b = 2 \lim_{b \rightarrow \infty} (\arctg b - \arctg 0) = 2 \left(\frac{\pi}{2} - 0 \right) = \pi$$

