

$$\left(\int_0^\infty \frac{\sin x}{\sqrt{x}} dx\right)^2 = \sum_{k=0}^{\infty} \frac{(2k)!}{2^{2k}(k!)^2} \frac{1}{2k+1} = \prod_{k=1}^{\infty} \frac{4k^2}{4k^2-1} = \frac{\pi}{2}$$