$$\int_C x\mathrm{d}s = \int_0^{\pi} x\sqrt{1+\cos^2 x}\,\mathrm{d}x = \frac{\pi}{2}\int_0^{\pi}\sqrt{1+\cos^2 x}\,\mathrm{d}x = \frac{\pi}{2}\int_0^{\pi}\frac{1+\cos^2 x}{\sqrt{1+\cos^2 x}}\,\mathrm{d}x$$

$$\geq \frac{\pi}{2\sqrt{2}}\int_0^{\pi}(1+\cos^2 x)\,\mathrm{d}x = \frac{3\sqrt{2}}{8}\pi^2 \quad \text{（3 分）}$$