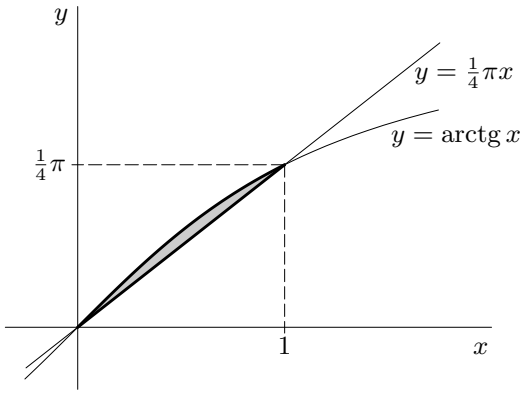
3.



$$S = \int_0^1 \operatorname{arctg} x \, \mathrm{d}x - \int_0^1 \tfrac{1}{4}\pi x \, \mathrm{d}x = \left[x \operatorname{arctg} x\right]_0^1 - \int_0^1 \frac{x}{1+x^2} \, \mathrm{d}x - \left[\tfrac{1}{8}\pi x^2\right]_0^1 =$$

$$= \left[x \operatorname{arctg} x\right]_0^1 - \tfrac{1}{2}\left[\ln\left(1+x^2\right)\right]_0^1 - \left[\tfrac{1}{8}\pi x^2\right]_0^1 =$$

$$= \tfrac{1}{4}\pi - 0 - \tfrac{1}{2}(\ln 2 - \ln 1) - \tfrac{1}{8}\pi + 0 = \tfrac{1}{8}\pi - \tfrac{1}{2}\ln 2$$