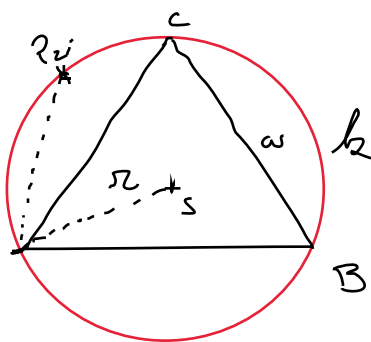


4.3:

1)

$P_1 = A$



volit 2 body P_1, P_2 na kružnici:

↳ volume $P_1 = A$ (rotační symetrie)

↳ volume P_2 rovnoměrně nahodn

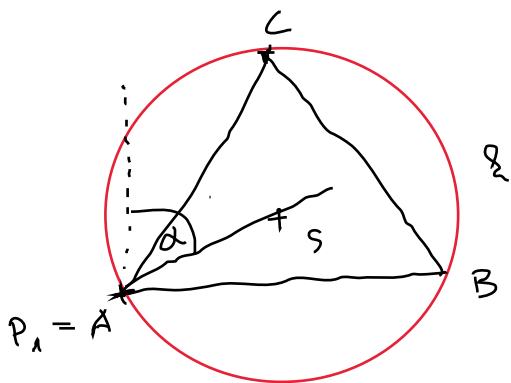
na $Q_2 \dots \Omega = Q_2$

$$|\Omega| = 2\pi r$$

{ délka tětivy $\geq a$ } = { $P_2 \in \widehat{BC}$ }

$$P(L) = \frac{|\widehat{BC}|}{|\Omega|} = \frac{2\pi r / 3}{2\pi r} = \frac{1}{3}$$

2)



volume (P_1, α)

↳ $P_1 = A$ (sym.)

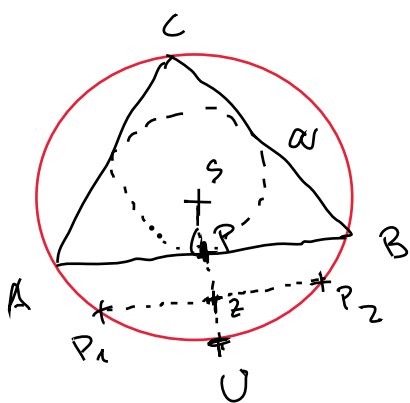
↳ α rovnoměrně z $(-90^\circ, 90^\circ)$

$$\Omega = (-90^\circ, 90^\circ), |\Omega| = 180^\circ$$

{ délka $\geq a$ } = { $\alpha \in (-30^\circ, 30^\circ)$ }

$$P(L) = \frac{60^\circ}{180^\circ} = \frac{1}{3}$$

3)



délka tětivy určena polohou jejího středu z

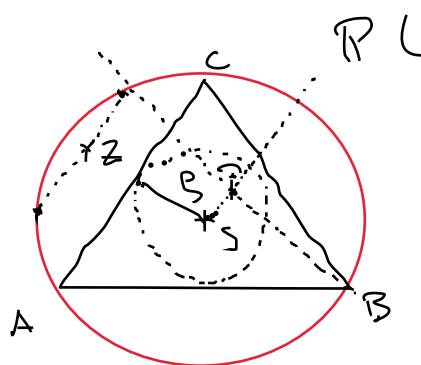
↳ rotační symetrie $\Rightarrow z \in SU$

$$\Omega = SU, |\Omega| = \pi$$

{ délka $\geq a$ } = { $z \in SP$ } $S = |SP| = \text{poloměr kružni}$

$$P(L) = \frac{|SP|}{|SU|} = \frac{r/2}{r} = \frac{1}{2}$$

4)



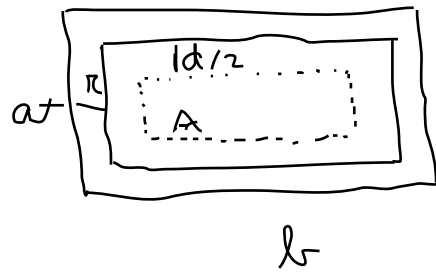
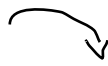
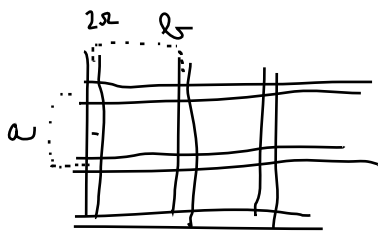
délka tětivy určena polohou středu z

↳ $z \in \text{Kruh} = \{ u \in \mathbb{R}^2 : |su| \leq r \}$

{ délka $\geq a$ } = { $\Omega, |\Omega| = \pi r^2$ }
 $\{ |zs| \leq S \}$

$$P(L) = \frac{\pi (r/2)^2}{\pi r^2} = \frac{1}{4}$$

5.1:



Ω ... středý kulice
 $|\Omega| = a b$

$A = \{ \text{kulička nezasáhne mříž} \}$

$\Omega \setminus A = \{ \text{zasáhne} \}$

$$P(\text{zasáhne}) = \frac{|\Omega \setminus A|}{|\Omega|} =$$

$$= \frac{a b - (a - 2r - d)(b - 2r - d)}{a b}$$

$$|\Omega \setminus A| = |\Omega| - |A|$$

$$|A| = (a - 2r - d)(b - 2r - d)$$

$$= \frac{(2r + d)(a + b - 2r - d)}{a b}$$

$a, b > 0$

$P_{50}:$

$\min(a, b) > 2r$

$\min(a, b) - 2r$

$= 1$... jinak.

