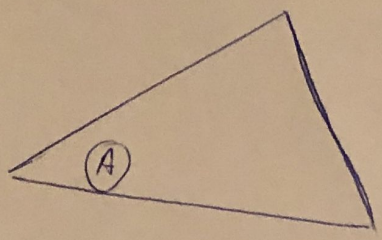
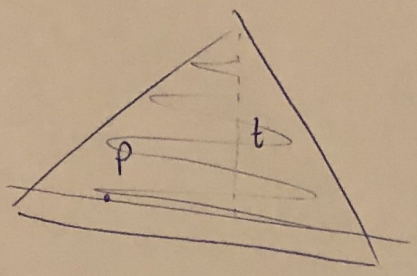
$$\mathbb{P}(P \in A) = \frac{S_A}{S_{\text{square}}} = \frac{S_A}{1}$$



$$F_{X_1}(t) = \mathbb{P}(X_1 \le t) = \frac{S_\Delta}{S_{ABC}} =$$

$$= \left(\frac{t}{h}\right)^2 \qquad t \in (0, h)$$

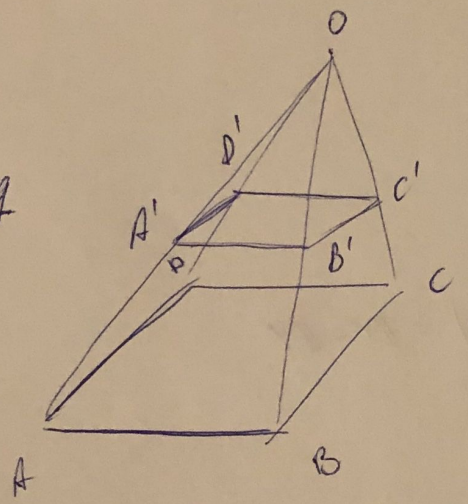


$$\Rightarrow f_{X_1}(t) = \frac{2t}{h^2} \mathbb{1}_{\{t \in (0,h)\}} \Rightarrow \mathbb{E} S_{QRST} = \int_0^h \frac{(h-x) \cdot ax}{h} \cdot \frac{2x}{h^2} dx =$$

$$= \frac{2a}{h^3} \int_0^h (h-x) x^2 dx = \frac{2a}{h^3} \left(h \frac{h^3}{3} - \frac{h^4}{4} \right) =$$

$$= 2ah \left(\frac{1}{3} - \frac{1}{4} \right) = 2ah \cdot \frac{1}{12} = \frac{a}{12} = \frac{1}{3}$$

Задача



$\mathbb{E} V_{A'B'C'D'}$ (V_1)

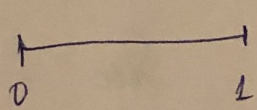
$$\mathbb{P}(V_1 \le c) = \frac{c}{1} \Rightarrow f_{V_1}(c) = 1$$

$$\Rightarrow \mathbb{E} V_1 = \frac{1}{2} = \int_0^1 x \cdot 1 \, dx$$

$$F_X^{-1}(\text{Unif}(0,1)) \overset{d}{=} X$$

$$\mathbb{P}(F_X^{-1}(u) \le t) = \mathbb{P}(F_X(F_X^{-1}(u)) \le F_X(t)) = \mathbb{P}(u \le F_X(t)) = F_X(t)$$

$$\| \quad F_X^{-1}(u)(t)$$



$U(0,1)$

1) Намиране F_X

2) Намиране F_X^{-1}

3) Симулиране $u_1, u_2, u_3, u_4 \ldots \sim \text{Unif}(0,1)$

4) $F_X^{-1}(u_1), F_X^{-1}(u_2) \ldots$ = симулиране от X

inverse transform sampling