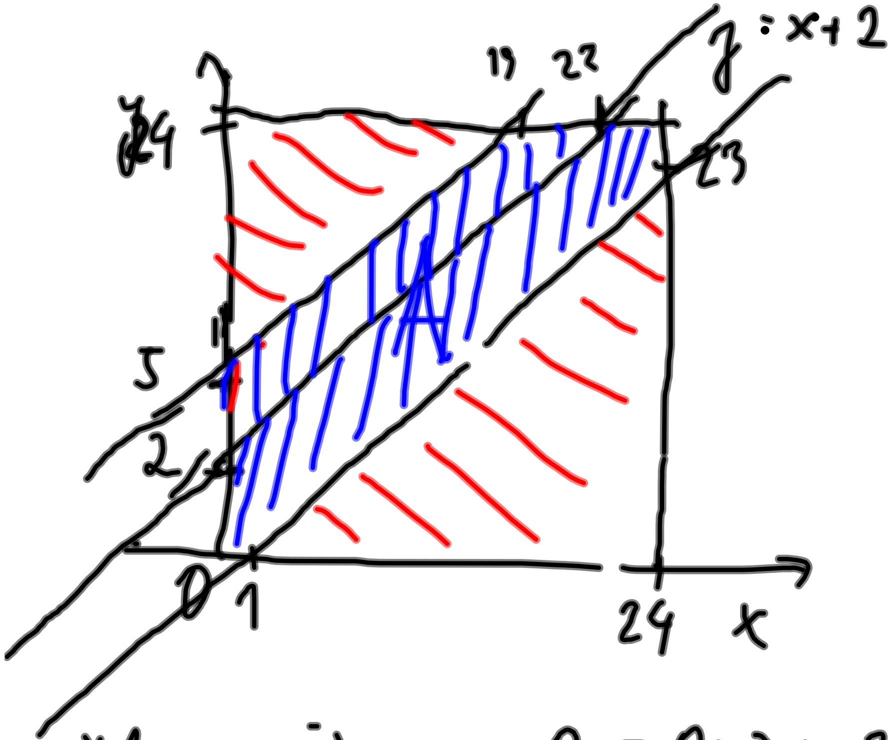


x… doba vyjetí Marka

y… doba, kdy vyjel Honza

jednotka…. 10 min

$$\left|\underbrace{(x+6)}_{\text{příjezd Marka}} - \underbrace{(y+4)}_{\text{příjezd Honzy}}\right| \leq 3$$

$$|x-y+2| \leq 3$$

i) $x-y+2 \geq 0 \Leftrightarrow x+2 \geq y$

$$x-y+2 \leq 3$$
$$x-1 \leq y$$

ii) $x-y+2 < 0 \Leftrightarrow x+2 < y$

$$-x+y-2 \leq 3$$
$$y \leq x+5$$

$$\mu(A) = \frac{S(A)}{S(\Omega)} = \frac{24^2 - \frac{1}{2}(23^2 + 19^2)}{24^2} \doteq$$

$$= \frac{131}{576} \doteq 0{,}227$$

A_1 ... překlepl se při psaní správného hesla

A_2 ... psal špatné heslo

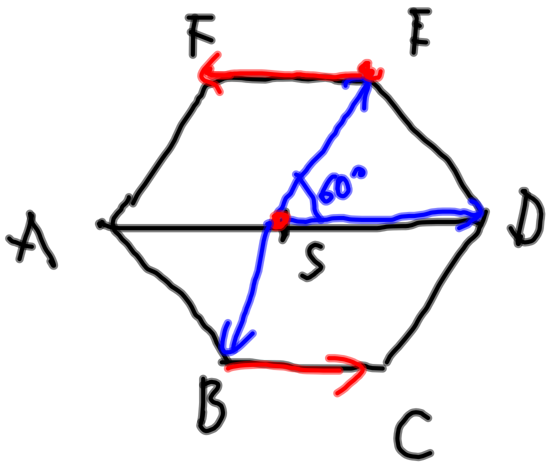
A ... $A_1 \cup A_2$

$$p(A_1) = \frac{1}{2} \cdot \frac{1}{20} = \frac{1}{40}$$

$$p(A_2) = \frac{1}{2}$$

$$p(A) = p(A_1 \cup A_2) = p(A_1) + p(A_2) = \frac{1}{40} + \frac{1}{2} = \frac{21}{40}$$

$$p(A_1/A) = \frac{p(A_1 \cap A)}{p(A)} = \frac{p(A_1)}{p(A)} = \frac{\frac{1}{40}}{\frac{21}{40}} = \frac{1}{21}$$



Otáčení o $60°$ v rovině v kladném smyslu:

$$\varphi \sim \begin{pmatrix} \cos 60° & -\sin 60° \\ \sin 60° & \cos 60° \end{pmatrix} \sim \begin{pmatrix} \frac{1}{2} & -\frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & \frac{1}{2} \end{pmatrix}$$

$$B = S + \vec{SB} = S - \vec{SE} =$$
$$= \left[\tfrac{3}{2}, \tfrac{3}{2}\right] - \left(\tfrac{3}{4} - \tfrac{3\sqrt{3}}{4}, \tfrac{3}{4} + \tfrac{3\sqrt{3}}{4}\right)$$
$$= \left[\tfrac{3}{4} + \tfrac{3\sqrt{3}}{4}, \tfrac{3}{4} - \tfrac{3\sqrt{3}}{4}\right]$$

$$S = \tfrac{1}{2}(A + D) = \left[\tfrac{3}{2}, \tfrac{3}{2}\right]$$

$$\vec{SD} = D - S = \left(\tfrac{3}{2}, \tfrac{3}{2}\right).$$

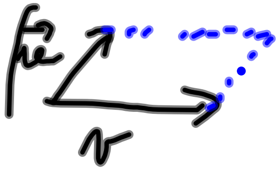
$$\vec{SE} = \varphi(\vec{SD}) = \begin{pmatrix} \frac{1}{2} & -\frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & \frac{1}{2} \end{pmatrix} \begin{pmatrix} \frac{3}{2} \\ \frac{3}{2} \end{pmatrix} = \begin{pmatrix} \frac{3}{4} - \frac{3\sqrt{3}}{4} \\ \frac{3\sqrt{3}}{4} + \frac{3}{4} \end{pmatrix}$$

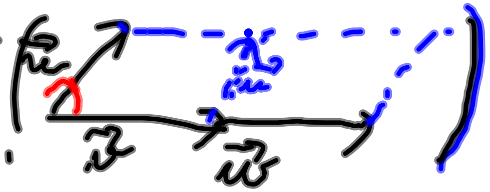
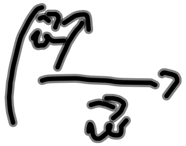
$$E = S + \vec{SE} = \left[\tfrac{3}{2}, \tfrac{3}{2}\right] + \left(\tfrac{3}{4} - \tfrac{3\sqrt{3}}{4}, \tfrac{3\sqrt{3}}{4} + \tfrac{3}{4}\right) =$$
$$= \left(\tfrac{9}{4} - \tfrac{3\sqrt{3}}{4}, \tfrac{9}{4} + \tfrac{3\sqrt{3}}{4}\right)$$

$$\vec{SF} = \varphi(\vec{SE}) = \begin{pmatrix} \frac{1}{2} & -\frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & \frac{1}{2} \end{pmatrix} \begin{pmatrix} \frac{3}{4} - \frac{3\sqrt{3}}{4} \\ \frac{3}{4} + \frac{3\sqrt{3}}{4} \end{pmatrix} =$$

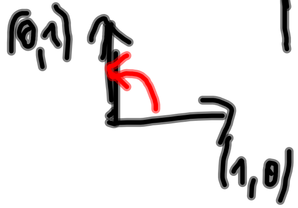
$$F = E + \vec{EF} = E + \left(-\frac{3}{2}, -\frac{3}{2}\right)$$

$$C = B + \left(\frac{3}{2}, \frac{3}{2}\right) \qquad S\big((u_1, u_2), (v_1, v_2)\big) =$$

$S\Big($  $\Big) = \begin{vmatrix} \vec{u} \\ \vec{v} \end{vmatrix} = \begin{vmatrix} u_1 & u_2 \\ v_1 & v_2 \end{vmatrix}$ $\qquad \begin{pmatrix} \vec{u} = (u_1, u_2) \\ \vec{v} = (v_1, v_2) \end{pmatrix}$

$S\Big($  $\Big) = S\Big($  $\Big) + S\Big($  $\Big)$ $\qquad S(\vec{u}, \vec{v}) = -S(\vec{v}, \vec{u})$

$$\Big(S(\vec{u}, \vec{v} + \vec{w})\Big) = S(\vec{u}, \vec{v}) + (\vec{u}, \vec{w})$$



$$S\big((0,1), (1,0)\big) = -S\big((1,0), (0,1)\big) = -1$$

$$S\big((u_1,u_2),(v_1,v_2)\big) = S\big(u_1\cdot(1,0)+u_2\cdot(0,1),\ v_1(1,0)+v_2(0,1)\big) =$$

$$= \overbrace{S\big(u_1(1,0),\ v_1(1,0)\big)}^{0} + S\big(u_1(1,0),\ v_2(0,1)\big) +$$

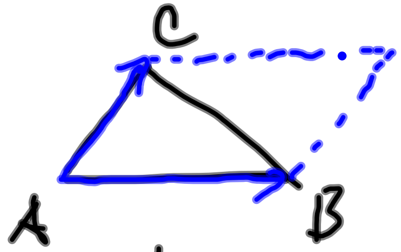
$$+ S\big(u_2(0,1),\ v_1(1,0)\big) + \underbrace{S\big(u_2\cdot(0,1),\ v_2\cdot(0,1)\big)}_{0} =$$

$$= u_1\cdot v_2 - u_2 v_1 = \begin{vmatrix} u_1 & u_2 \\ v_1 & v_2 \end{vmatrix}$$

$A=[2,2],\ B=[8,8],\ C=[3,5]$

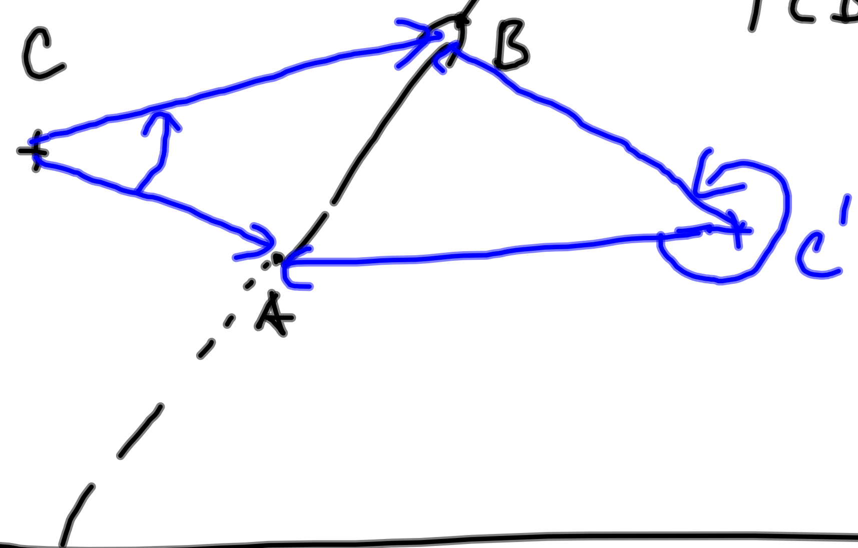
$\vec{AB} = B - A = (6,6)$

$\vec{AC} = C - A = (1,3)$



$$S_{ABC} = \frac{1}{2}\begin{vmatrix} 6 & 6 \\ 1 & 3 \end{vmatrix} = \frac{1}{2}(18-6) = 6$$

$\begin{vmatrix} \vec{CA} \\ \vec{CB} \end{vmatrix} > 0$ $\begin{vmatrix} \vec{C'A} \\ \vec{C'B} \end{vmatrix} < 0$



Je bod S naľavo od $\vec{AB}$?

$\begin{vmatrix} \vec{SA} \\ \vec{SB} \end{vmatrix} = \begin{vmatrix} 7 & 3 \\ 9 & 6 \end{vmatrix} > 0$

$\begin{vmatrix} \vec{SB} \\ \vec{SC} \end{vmatrix} = \begin{vmatrix} 9 & 6 \\ 8 & 9 \end{vmatrix} > 0$

$\begin{vmatrix} \vec{SC} \\ \vec{SA} \end{vmatrix} = \begin{vmatrix} 8 & 9 \\ 7 & 3 \end{vmatrix} < 0$

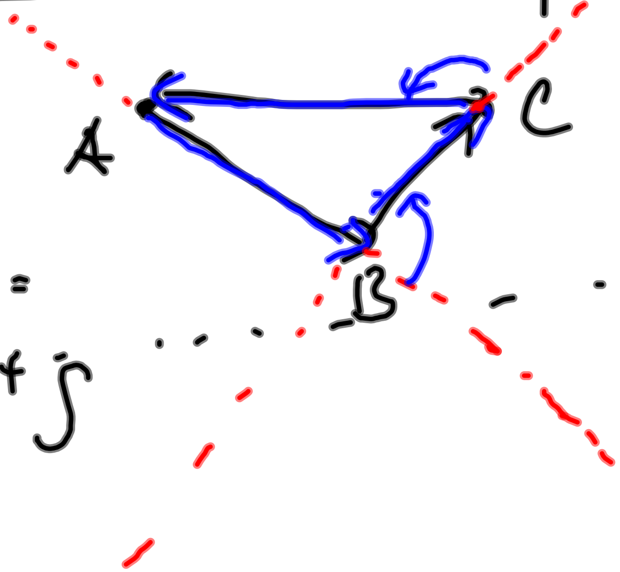
$\Downarrow$

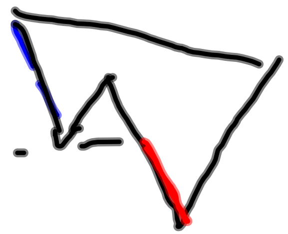
vidíme stranu CA

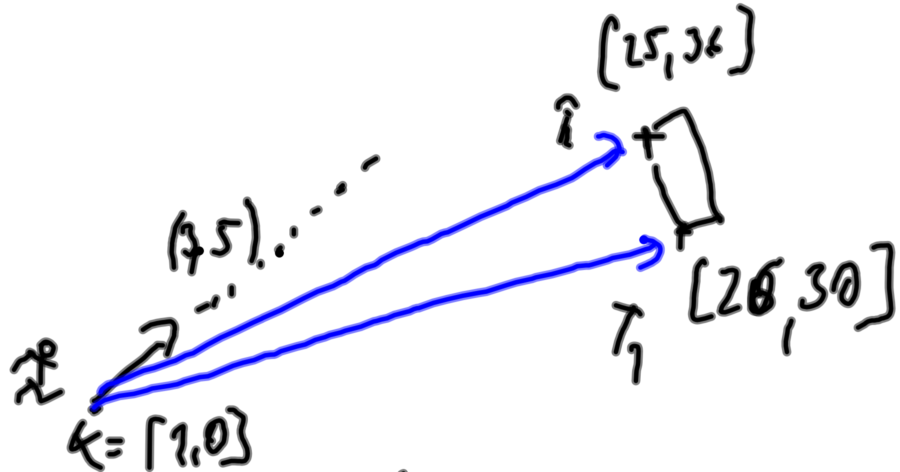
$\vec{SA} = (7,3)$
$\vec{SB} = (9,6)$
$\vec{SC} = (8,9)$

$\vec{AB} = (2,3)$
$\vec{BC} = (-1,-3)$

$\begin{vmatrix} \vec{AB} \\ \vec{BC} \end{vmatrix} = \begin{vmatrix} 2 & 3 \\ -1 & -3 \end{vmatrix} = -6+3 = -3 < 0$







Míč směruje do brány ⟺ směrnice přímek určených kopáčem a tyčkami svírají směrnici přímky dané vektorem $(3,5) \sim \frac{5}{3}$

$$\vec{KT_1} = (25,30) \sim (5,6) \qquad \frac{6}{5} \qquad \begin{vmatrix} \vec{KT_1} \\ 3 \quad 5 \end{vmatrix} =$$

směrnice

$$\vec{KT_2} = (24,36) \sim \qquad \frac{3}{2} \qquad = \begin{vmatrix} 5 & 6 \\ 3 & 5 \end{vmatrix} > 0$$

$\frac{5}{3} > \frac{6}{5}$, $\frac{5}{3} > \frac{3}{2}$ ⟹ míč jde vedle

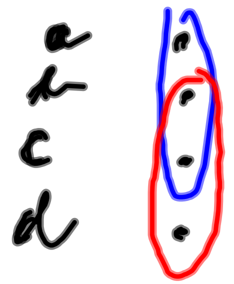
$5 \cdot 5 > 3 \cdot 6$

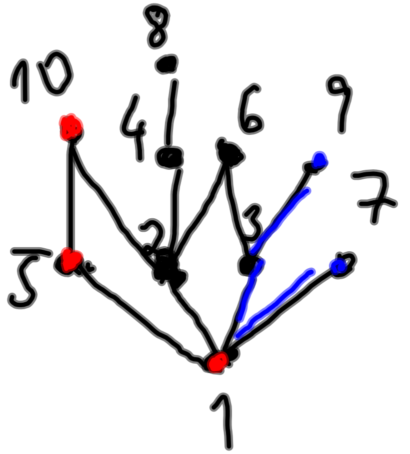
$$\binom{7}{6}\cdot 6!$$

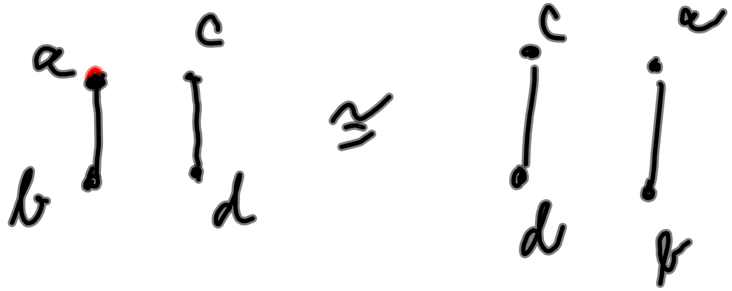
1	a
2	f
3	c
4	e
5	d
6	b

$$4^6 - \binom{4}{3}3^6 - \binom{4}{2}2^6 + \binom{4}{1}\cdot 1$$

Množina zobrazení z A do B se někdy značí B^A







$\{(1,2), (1,5), (5,10), (1,10), (1,2), (1,3), (1,5) \ldots\}$