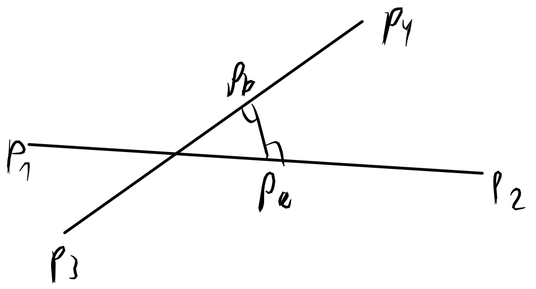

$$P_a = P_1 + \mu_a (P_2 - P_1)$$

$$P_b = P_3 + \mu_b (P_4 - P_3)$$

$$\left(\overline{(P_a - P_b)} , \overline{(P_2 - P_1)} \right) = 0$$

$$\left(\overline{(P_a - P_b)} , \overline{(P_4 - P_3)} \right) = 0$$

$$\left(\underbrace{P_1 - P_3}_{P_{31}} + \mu_a \underbrace{(P_2 - P_1)}_{P_{12}} - \mu_b (P_4 - P_3) , \underbrace{\overline{P_2 - P_1}}_{\bar{P}_{12}} \right) = 0$$

$$\left(\underbrace{P_1 - P_3}_{P_{31}} + \mu_a \underbrace{(P_2 - P_1)}_{P_{12}} - \mu_b (P_4 - P_3) , \underbrace{\overline{P_4 - P_3}}_{\bar{P}_{34}} \right) = 0$$

$$\left(\bar{P}_{31} + \mu_a \bar{P}_{12} - \mu_b \bar{P}_{34} , P_{12} \right) = 0$$

$$\left(\bar{P}_{31} + \mu_a \bar{P}_{12} - \mu_b \bar{P}_{34} , P_{34} \right) = 0$$

$$\begin{cases} (P_{31}, P_{12}) + \mu_a (P_{12}, P_{12}) - \mu_b (P_{34}, P_{12}) = 0 \\ (P_{31}, P_{34}) + \mu_a (P_{12}, P_{34}) - \mu_b (P_{34}, P_{34}) = 0 \end{cases}$$

$$\Rightarrow \mu_b = \frac{(P_{31}, P_{34}) + \mu_a (P_{12}, P_{34})}{(P_{34}, P_{34})}$$

$0 \le \mu \le 1$ чтобы точка принадлежала отрезку

$$\mu_a \left((P_{12}, P_{12}) - \frac{(P_{12}, P_{34})}{(P_{34}, P_{34})} (P_{34}, P_{12}) \right) = \frac{(P_{31}, P_{34})}{(P_{34}, P_{34})} (P_{34}, P_{12}) - (P_{31}, P_{12})$$

$$\Rightarrow \mu_a = \frac{(P_{31}, P_{34})(P_{34}, P_{12}) - (P_{31}, P_{12})(P_{34}, P_{34})}{(P_{12}, P_{12})(P_{34}, P_{34}) - (P_{12}, P_{34})(P_{34}, P_{12})}$$