7) $\overleftrightarrow{AB}: \{[2+3t; 3-4t] \mid t \in \mathbb{R}\}$

$\overleftrightarrow{AB} \cap \pi: 2(2+3t)+7(3-4t)-12=0$

$4+6t+21-28t-12=0$

$13 = 22t$

$\overleftrightarrow{AB} \cap \pi = \left[2+\frac{39}{22}; 3-\frac{52}{22}\right] =$

$\overleftrightarrow{AB} \cap \pi = \left[\frac{83}{22}; \frac{7}{11}\right]$

$\frac{7}{11} \in \langle 1; 3 \rangle \Rightarrow$ AB ∩ π ≠ ∅

31) $\overleftrightarrow{AB} = \{[-1; -2+3t] \mid t \in \mathbb{R}\}$

$\overleftrightarrow{AB}: x + 0y + 1 = 0$

$\overleftrightarrow{CD} = \{[1+1_0; 1+2_0] \mid 1_0 \in \mathbb{R}\}$

$\overleftrightarrow{AB} \cap \overleftrightarrow{CD}: \quad 1+1_0+1=0 \Rightarrow 1_0 = -2$

$\overleftrightarrow{AB} \cap \overleftrightarrow{CD} = [-1; -3]$

32) $\begin{pmatrix} 3 & 1 & 2 \\ 1 & -1 & 6 \end{pmatrix} \sim \begin{pmatrix} 1 & -1 & 6 \\ 0 & 4 & -16 \end{pmatrix} \sim$

$\begin{pmatrix} 1 & 0 & 2 \\ 0 & 1 & -4 \end{pmatrix} \Rightarrow \pi \cap q = [2; -4]$

$\rho: 2x - y + z = 0$

$\pi \cap q \in \rho: 4 + 4 + z = 0 \Rightarrow z = -8$

$\rho: 2x - y - 8 = 0$

32) $\pi: x + y - 3 = 0$

$q = \{[2k; -3+k] \mid k \in \mathbb{R}\}$

$\pi \cap q: 2k - 3 + k - 3 = 0 \Rightarrow k = 2$

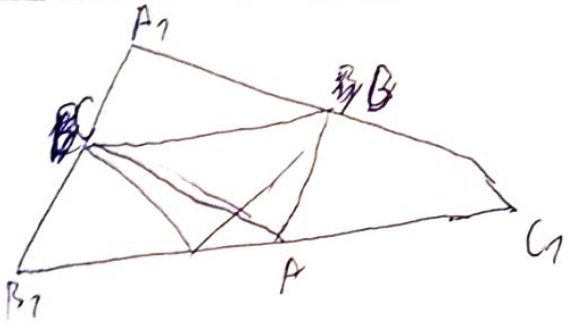
$\pi \cap q = [4; -1]$

$\rho: 3x + 4y + z = 0$

$\pi \cap q \in \rho: 12 - 4 + z = 0 \Rightarrow z = -8$

$\rho: 3x + 4y - 8 = 0$

36)



ΔABC je evidentně řezem vnitřními přičkami ▷ $A_1B_1C_1$

$\overrightarrow{BC} = (-1; -4) = \overrightarrow{B_1A} = \overrightarrow{AC_1}$

$B_1 = A - \overrightarrow{BC} = [2; 6]$

$C_1 = A + \overrightarrow{BC} = [0; -2]$

$\overrightarrow{AC} = (-4; -3) = \overrightarrow{BA_1}$

$A_1 = B + \overrightarrow{AC} = [-6; -6]$