$$5+\frac{(\lambda+12)(\lambda-10)}{21}=0$$

$$105+\lambda^2-10\lambda+12\lambda-120=0$$

$$\lambda^2+2\lambda-15=0$$

$$\lambda_{1,2}=\frac{-2\pm\sqrt{4-4\cdot(-15)}}{2}=\begin{cases}\lambda_1=\frac{-2+8}{2}=3\\ \lambda_2=\frac{-2-8}{2}=-5\end{cases}$$

① $$1+\frac{\lambda-10}{7}=0$$

$$7+\lambda-10=0$$

$$\lambda=3$$

Ha $\lambda=3$ a mátrix rangja 2 ha λ nem $\neq 3$ akkor a rang 3.

⑥ $(4\lambda_1+7\lambda_2+4\lambda_3\,;\,4\lambda_1+2\lambda_2+1\lambda_3\,;\,3\lambda_1+1\lambda_2+6\lambda_3)=(5,9,\lambda)$

$$\left(\begin{array}{ccc|c}4&7&4&5\\4&2&1&9\\3&1&6&\lambda\end{array}\right)\sim\left(\begin{array}{ccc|c}4&7&4&5\\0&-5&-3&4\\0&-\frac{17}{4}&3&\lambda-\frac{15}{4}\end{array}\right)\sim\left(\begin{array}{ccc|c}4&7&4&5\\0&-5&-3&4\\0&+17&-3&-4\lambda+15\end{array}\right)\sim$$

$$\left(\begin{array}{ccc|c}4&7&4&5\\0&-5&-3&4\\0&0&-\frac{66}{5}&-4\lambda+15-\frac{17}{5}\cdot(-4)\end{array}\right)$$