

## INVERZNÁ MATICA POMOCOU GAUSSOVEJ ELIMINÁCIE

$$(A|E) \approx \dots \approx (E|A^{-1})$$

PRÍKLAD

$$\begin{aligned}
 (A|E) &= \left( \begin{array}{ccc|ccc} \boxed{3} & -6 & 3 & 1 & 0 & 0 \\ 9 & -6 & 0 & 0 & 1 & 0 \\ -9 & 0 & 3 & 0 & 0 & 1 \end{array} \right) \begin{array}{l} -3R_1 \\ +3R_1 \end{array} \approx \left( \begin{array}{ccc|ccc} 3 & -6 & 3 & 1 & 0 & 0 \\ 0 & \boxed{12} & -9 & -3 & 1 & 0 \\ 0 & -12 & 12 & 3 & 0 & 1 \end{array} \right) \begin{array}{l} \cdot 3 \\ \cdot 2 \end{array} \approx \\
 &\approx \left( \begin{array}{ccc|ccc} 3 & -6 & 3 & 1 & 0 & 0 \\ 0 & 36 & -27 & -9 & 3 & 0 \\ 0 & -36 & 24 & 6 & 0 & 2 \end{array} \right) \begin{array}{l} :3 \\ +R_2 \end{array} \approx \left( \begin{array}{ccc|ccc} 3 & -6 & \boxed{3} & 1 & 0 & 0 \\ 0 & 12 & -9 & -3 & 1 & 0 \\ 0 & 0 & \boxed{-3} & -3 & 3 & 2 \end{array} \right) \begin{array}{l} +R_3 \\ -3R_3 \end{array} \approx \\
 &\approx \left( \begin{array}{ccc|ccc} 3 & -6 & 0 & -2 & 3 & 2 \\ 0 & 12 & 0 & 6 & -8 & -6 \\ 0 & 0 & -3 & -3 & 3 & 2 \end{array} \right) \begin{array}{l} :2 \\ \cdot (-1) \end{array} \approx \left( \begin{array}{ccc|ccc} 3 & \boxed{-6} & 0 & -2 & 3 & 2 \\ 0 & \boxed{6} & 0 & 3 & -4 & -3 \\ 0 & 0 & 3 & 3 & -3 & -2 \end{array} \right) \begin{array}{l} +R_2 \\ \approx \end{array} \\
 &\approx \left( \begin{array}{ccc|ccc} 3 & 0 & 0 & 1 & -1 & -1 \\ 0 & 6 & 0 & 3 & -4 & -3 \\ 0 & 0 & 3 & 3 & -3 & -2 \end{array} \right) \begin{array}{l} :3 \\ :6 \\ :3 \end{array} \approx \left( \begin{array}{ccc|ccc} 1 & 0 & 0 & \frac{1}{3} & -\frac{1}{3} & -\frac{1}{3} \\ 0 & 1 & 0 & \frac{3}{6} & -\frac{4}{6} & -\frac{3}{6} \\ 0 & 0 & 1 & \frac{3}{3} & -\frac{3}{3} & -\frac{2}{3} \end{array} \right) = (E|A^{-1}) \\
 A^{-1} &= \begin{pmatrix} \frac{1}{3} & -\frac{1}{3} & -\frac{1}{3} \\ \frac{3}{6} & -\frac{4}{6} & -\frac{3}{6} \\ \frac{3}{3} & -\frac{3}{3} & -\frac{2}{3} \end{pmatrix} = \begin{pmatrix} \frac{2}{6} & -\frac{2}{6} & -\frac{2}{6} \\ \frac{3}{6} & -\frac{4}{6} & -\frac{3}{6} \\ \frac{6}{6} & -\frac{6}{6} & -\frac{4}{6} \end{pmatrix} = \frac{1}{6} \begin{pmatrix} 2 & -2 & -2 \\ 3 & -4 & -3 \\ 6 & -6 & -4 \end{pmatrix}
 \end{aligned}$$