① Inverse of Matrix

$$\begin{bmatrix} -3 & 4 & -3 \\ 1 & 2 & 3 \\ 5 & 0 & -1 \end{bmatrix}$$

Formula $= \frac{1}{\det(A)} \cdot \text{adj } A$

$(+6+60+0)-(-30-4) = 100 = \det(A)$

$$\begin{bmatrix} +(-2) & +16 & +(-10) \\ +4 & +18 & -20 \\ +18 & +12 & (+10) \end{bmatrix} \begin{bmatrix} -10 & -20 & -10 \\ 16 & 18 & 12 \\ -2 & 4 & 18 \end{bmatrix} \cdot \frac{1}{100}$$

Solution

$$\begin{bmatrix} -\frac{1}{10} & -\frac{1}{5} & -\frac{1}{10} \\ \frac{16}{100} & \frac{18}{100} & \frac{12}{100} \\ -\frac{1}{50} & \frac{1}{25} & \frac{18}{100} \end{bmatrix}$$

$$\rightleftharpoons$$

$$\begin{bmatrix} -\frac{1}{10} & -\frac{1}{5} & -\frac{1}{10} \\ \frac{4}{25} & \frac{9}{50} & \frac{3}{25} \\ -\frac{1}{50} & \frac{1}{25} & \frac{9}{50} \end{bmatrix}$$

(2) $\left[\begin{array}{ccc|c} 3 & 2 & -4 & 8 \\ 2 & -5 & 4 & 1 \\ 5 & 6 & -9 & 2 \end{array}\right]$

$\Delta = 3(45-24) + 2(-18-20) - 4(12+25)$

$57 \quad +72 \quad -108 \qquad \Delta = -9$

$129 - 108 = -9$

$\left[\begin{array}{ccc} 8 & 2 & -4 \\ 1 & -5 & 4 \\ 2 & 6 & -9 \end{array}\right] = \Delta_1 = 8(45) - 2(-9-8) - 4(6+10)$

$360 + 34 - 64 = 138$

$\left[\begin{array}{ccc} 3 & 8 & -4 \\ 2 & 1 & 4 \\ 5 & 2 & -9 \end{array}\right] = 3(-9-8) - 8(-18-20) - 4(4-5)$

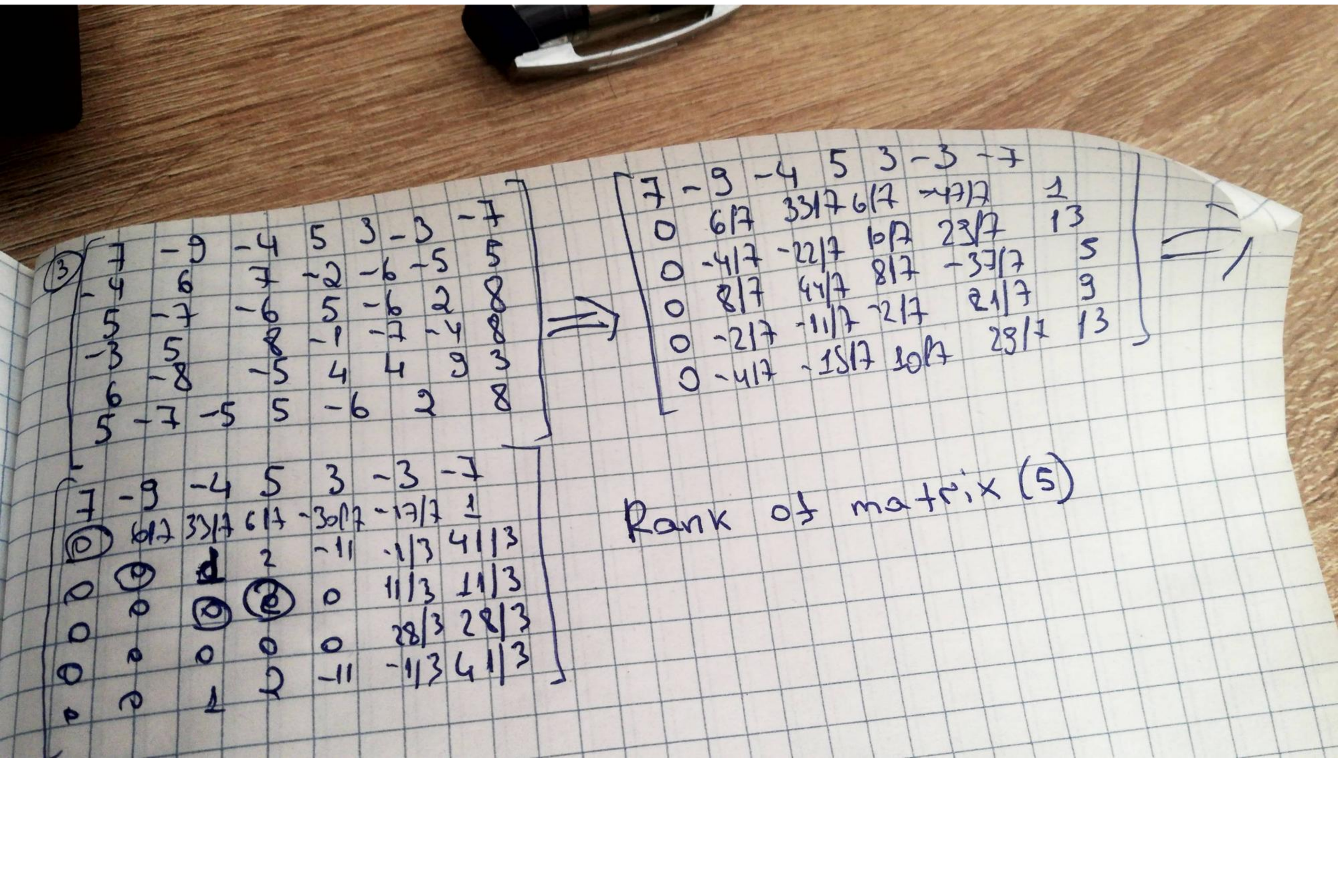
$-51 + 304 + 4 = 257$

$\left[\begin{array}{ccc} 3 & 2 & 8 \\ 2 & -5 & 1 \\ 5 & 6 & 2 \end{array}\right] = 3(-10-6) - 2(4-5) + 8(12+25)$

$-48 + 2 + 276 = 230$

$278 - 48$

$x_1 = \frac{138}{-9}$ $\quad x_2 = \frac{257}{-9}$ $\quad x_3 = \frac{+250}{-9}$



Rank of matrix (5)