Soluții

1. **a)** $A(1,1)=\begin{pmatrix}1 & 1\\ -1 & 0\end{pmatrix}$; $\det A(1,1)=1$.

b) $A+B=\begin{pmatrix}a_1+a_2 & b_1+b_2\\ -(b_1+b_2) & a_1+a_2-(b_1+b_2)\end{pmatrix}$, cu elemente din $\mathbb{R}\Rightarrow A+B\in\mathcal{M}$.

c) $A(0,b)=\begin{pmatrix}0 & b\\ -b & -b\end{pmatrix}$, $I_2-A(0,b)=\begin{pmatrix}1 & -b\\ b & 1+b\end{pmatrix}$; $\det\left(I_2-A(0,b)\right)=1+b+b^2$

$1+b+b^2=\left(b+\frac{1}{2}\right)^2+\frac{3}{4}>0,\forall b\in\mathbb{R}$.

2. a) $g\left(\hat{0}\right)=\hat{1}$.

b) $f=X\left(X^2+\hat{2}\right)$; $\hat{1}^2=\hat{2}^2=\hat{1}$, $f\left(\hat{0}\right)=f\left(\hat{1}\right)=f\left(\hat{2}\right)=\hat{0}$.

c) $h=aX^3+bX^2+cX+d$, $h\left(\hat{0}\right)=d\Rightarrow d=\hat{0}$, $h\left(\hat{1}\right)=a+b+c=\hat{0}$, $h\left(\hat{2}\right)=\hat{2}a+b+\hat{2}c=\hat{0}\Rightarrow b=\hat{0}$ şi $a+c=\hat{0}$.

Soluțiile: $a=\hat{2}$, $b=\hat{0}$, $c=\hat{1}$, $h=\hat{2}X^3+X$ sau $a=\hat{1}$, $b=\hat{0}$, $c=\hat{2}\Rightarrow h=X^3+\hat{2}X$.