Sugestão de resolução do 2 º Mini - Teste de ALGA (LEB, 2011/2012)

1. (2×0.2 val.)

(a)

In[1]:=
```
a = {{1, 0}, {0, 0}}; b = {{0, 0}, {0, 1}};
a + b // MatrixForm
```

Out[2]//MatrixForm=

$$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

In[3]:=
```
Det[a]
```

Out[3]= 0

In[4]:=
```
Det[b]
```

Out[4]= 0

In[5]:=
```
Det[a + b]
```

Out[5]= 1

In[6]:=
```
Det[a] + Det[b] == Det[a + b]
```

Out[6]= False

(b)

In[7]:=
```
a = {{0, 0}, {0, 0}}; b = {{1, 0}, {0, 1}};
a + b // MatrixForm
```

Out[8]//MatrixForm=

$$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

In[9]:=
```
Det[a]
```

Out[9]= 0

In[10]:=
```
Det[b]
```

Out[10]= 1

In[11]:=
```
Det[a + b]
```

Out[11]= 1

In[12]:=
```
Det[a] + Det[b] == Det[a + b]
```

Out[12]= True

In[13]:=
```
ClearAll[a, b]
```

2. (2×0.3 val.)

(a)

In[14]:=
```
a[α_] := {{α + 1, 1, 1}, {1, α + 1, 1}, {1, 1, α + 1}}
```

In[15]:=
```
Det[a[α]]
```

Out[15]= $3\,\alpha^2 + \alpha^3$

In[16]:=
```
Solve[Det[a[α]] == 0, α]
```

Out[16]= {{α → −3}, {α → 0}, {α → 0}}

(b)

In[17]:=
```
LinearSolve[a[1], {4, 4, 4}]
```

Out[17]= {1, 1, 1}