Calcolo di determinanti

PASSED

calcolare i determinanti delle seguenti matrici 2x2 usando la regola di Sarrus

1	$\begin{pmatrix} 1 & 2 \\ 2 & 1 \end{pmatrix}$	-3
2	$\begin{pmatrix} 0 & 3 \\ 0 & -2 \end{pmatrix}$	0
3	$\begin{pmatrix} 3 & -5 \\ 1 & 2 \end{pmatrix}$	11
4	$\begin{pmatrix} 2 & 6 \\ -1 & 5 \end{pmatrix}$	16
5	$\begin{pmatrix} 1 & 6 \\ 9 & -4 \end{pmatrix}$	-58
6	$\begin{pmatrix} 0 & 11 \\ -7 & 0 \end{pmatrix}$	77
7	$\begin{pmatrix} 1 & 0 \\ 5 & 3 \end{pmatrix}$	3
8	$\begin{pmatrix} 5 & 3 \\ 1 & 0 \end{pmatrix}$	-3
9	$\begin{pmatrix} 1/2 & 1/3 \\ -3 & -2 \end{pmatrix}$	0

10	$\begin{pmatrix} 5/4 & 18/7 \\ 2/9 & 8/7 \end{pmatrix}$	$\frac{6}{7}$
11	$\begin{pmatrix} -2/3 & -4 \\ 0 & 3/16 \end{pmatrix}$	$-\frac{1}{8}$
12	$\begin{pmatrix} -\frac{5}{2} & -6 \\ \frac{1}{9} & \frac{2}{3} \end{pmatrix}$	-1
13	$\begin{pmatrix} -1 & -9/22 \\ 5/3 & -4/11 \end{pmatrix}$	$\frac{23}{22}$
14	$\begin{pmatrix} 1/\sqrt{2} & 0 \\ 7/3 & -1/\sqrt{2} \end{pmatrix}$	$-\frac{1}{2}$
15	$\begin{pmatrix} \sqrt{2}/2 & 1/\sqrt{7} \\ -1 & \sqrt{14}/7 \end{pmatrix}$	$\frac{2\sqrt{7}}{7}$
16	$\begin{pmatrix} 7 & 5/2 \\ 14 & 5 \end{pmatrix}$	0

17	$\begin{pmatrix} 2 & 2^2 \\ 2^3 & 2^{-1} \end{pmatrix}$	-31
18	$\begin{pmatrix} -1 & 2 \\ 1 & -1 \end{pmatrix}$	-1
19	$\begin{pmatrix} 2/3 & 12/7 \\ -2/5 & 7/8 \end{pmatrix}$	$\frac{533}{420}$
20	$\begin{pmatrix} \sqrt{3} & -\sqrt[3]{9} \\ -\sqrt[3]{3} & \sqrt{3} \end{pmatrix}$	0
21	$\begin{pmatrix} 3 & 5/2 \\ -3 & -3/2 \end{pmatrix}$	3
22	$\begin{pmatrix} 1-\sqrt{5}/2 & 1+\sqrt{5} \\ 1+\sqrt{5}/2 & 1-\sqrt{5} \end{pmatrix}$	$-3\sqrt{5}$

23	$\begin{pmatrix} 3/5 & 0 \\ 0 & 5/12 \end{pmatrix}$	$\frac{1}{4}$
24	$\begin{pmatrix} 0 & \sqrt{2}/3 \\ \sqrt{6} & 0 \end{pmatrix}$	$-\frac{2\sqrt{3}}{3}$
25	$\begin{pmatrix} a+1 & a+1 \\ a+2 & a+4 \end{pmatrix}$	$2(a+1)$
26	$\begin{pmatrix} \sqrt{3}+1 & \sqrt{2}+1 \\ 3-\sqrt{2} & \sqrt{3}-2 \end{pmatrix}$	$-(\sqrt{3}+2\sqrt{2})$
27	$\begin{pmatrix} \sqrt{x-1} & x-2 \\ 1 & \sqrt{x-1} \end{pmatrix}$	1
28	$\begin{pmatrix} 2-i & i \\ 2i & 1+i \end{pmatrix}$	$i+5$

29	$\begin{pmatrix} \sin x & \cos x \\ \sin x + 1 & 1 + \cos x \end{pmatrix}$	$\sin x - \cos x$
30	$\begin{pmatrix} \sin\frac{\pi}{4} & \cot\frac{4\pi}{3} \\ \cos\frac{5\pi}{4} & \tan\frac{5\pi}{6} \end{pmatrix}$	0

calcolare i determinanti delle seguenti matrici 3x3 usando la regola di Sarrus o Laplace

31	$\begin{pmatrix} 0 & 1 & 2 \\ 1 & 0 & 3 \\ 1 & 1 & 1 \end{pmatrix}$	4
32	$\begin{pmatrix} 1 & -4 & 3 \\ 5 & 0 & 0 \\ -1 & 0 & 2 \end{pmatrix}$	40
33	$\begin{pmatrix} 1 & 4 & 1 \\ 2 & 5 & -3 \\ -2 & 3 & 4 \end{pmatrix}$	37
34	$\begin{pmatrix} 6 & -3 & 3 \\ 1 & 0 & 1 \\ -2 & 2 & 0 \end{pmatrix}$	0

35	$\begin{pmatrix} 18 & 4 & -1 \\ 1 & 0 & 0 \\ 2 & 0 & 0 \end{pmatrix}$	0
36	$\begin{pmatrix} 3 & 2 & 1 \\ 1 & 2 & 1 \\ -3 & 4 & 3 \end{pmatrix}$	4
37	$\begin{pmatrix} 1 & 1/2 & 7 \\ -1 & -1/2 & 7 \\ 1 & 0 & 14 \end{pmatrix}$	7
38	$\begin{pmatrix} 12 & -9 & -17 \\ -4 & 3 & 5 \\ -10 & 8 & 15 \end{pmatrix}$	4
39	$\begin{pmatrix} 2 & 5 & 2 \\ 1/4 & -2 & 7/4 \\ -1 & 3 & -1 \end{pmatrix}$	$-\frac{33}{2}$

40	$\begin{pmatrix} 1/2 & 1 & 0 \\ 5/8 & 0 & -2/3 \\ 0 & 4 & 8 \end{pmatrix}$	$-\frac{11}{3}$
41	$\begin{pmatrix} 0 & -1 & 0 \\ 2 & 7 & 9 \\ 0 & 1 & 0 \end{pmatrix}$	0
42	$\begin{pmatrix} 0 & 5 & 0 \\ 1 & -3 & 6 \\ 0 & 0 & 3 \end{pmatrix}$	-15
43	$\begin{pmatrix} 1 & 3 & -4 \\ -5 & 0 & 4 \\ 3 & 2 & -2 \end{pmatrix}$	38
44	$\begin{pmatrix} 0 & -1 & 0 \\ 5 & 0 & 2 \\ -1/4 & 3/7 & 1 \end{pmatrix}$	$\frac{11}{2}$

45	$\begin{pmatrix} 2/5 & 0 & 6 \\ 0 & -4 & 4/7 \\ 5/8 & 13/4 & 0 \end{pmatrix}$	$\frac{499}{35}$
46	$\begin{pmatrix} -1 & 0 & 8 \\ 0 & 7/5 & -7/2 \\ 4/5 & -7/3 & 0 \end{pmatrix}$	$-\frac{119}{150}$
47	$\begin{pmatrix} 5/2 & -1/4 & 0 \\ -3/4 & -2 & 1/7 \\ 2/5 & 3/5 & 0 \end{pmatrix}$	$-\frac{8}{35}$
48	$\begin{pmatrix} 12/7 & -5/4 & 0 \\ -1/5 & -2 & 2/7 \\ 0 & -1 & 3 \end{pmatrix}$	$-\frac{2067}{196}$
49	$\begin{pmatrix} 0 & 1/3 & -2/9 \\ -1 & 0 & 0 \\ 7 & 5/6 & 2 \end{pmatrix}$	$\frac{23}{27}$

50	$\begin{pmatrix} -3 & 1/\sqrt{2} & 0 \\ 0 & \sqrt{2} & 1 \\ \sqrt{2} & -7 & 4/3 \end{pmatrix}$	$-4(5+\sqrt{2})$
51	$\begin{pmatrix} 0 & -3 & 1 \\ -\sqrt{7} & 1 & 9/2 \\ 2 & -\sqrt{7} & 0 \end{pmatrix}$	-22
52	$\begin{pmatrix} \sqrt{3}/5 & \sqrt{3} & -\sqrt{5} \\ 0 & -8 & 0 \\ -1 & 2/5 & 0 \end{pmatrix}$	$8\sqrt{5}$

calcolare i determinanti delle seguenti matrici 4x4 usando il teorema Laplace

53	$\begin{pmatrix} 0 & 9 & -1 & -2 \\ 1 & -1 & 3/4 & 3/2 \\ 1 & -1 & -3/4 & -3/2 \\ 7 & 0 & 1/\sqrt{2} & \sqrt{2} \end{pmatrix}$	0
54	$\begin{pmatrix} 2 & 3 & 0 & 4 \\ 1 & 5 & 2 & -2 \\ 0 & 4 & 1 & 4 \\ 1 & 1 & 3 & 3 \end{pmatrix}$	-201

55	$\begin{pmatrix} 1 & -2 & 4 & 3 \\ 4 & -3 & 9 & 5 \\ 3 & -1 & 5 & 2 \\ 7 & 4 & -5 & 8 \end{pmatrix}$	0
56	$\begin{pmatrix} -1 & 0 & -2 & 3 \\ 1 & 0 & -2 & 4 \\ -1 & 5 & 1 & 0 \\ 1 & 1 & 0 & 2 \end{pmatrix}$	-21
57	$\begin{pmatrix} 1 & 0 & 2 & -1 \\ 9 & 15 & 0 & 27 \\ 1 & -1 & 7 & 1 \\ 0 & -1 & 5 & 2 \end{pmatrix}$	0
58	$\begin{pmatrix} 0 & 1 & 0 & 2 \\ 8 & 0 & -5 & 0 \\ 0 & 7 & 0 & -1 \\ 3 & 0 & -2 & 0 \end{pmatrix}$	15
59	$\begin{pmatrix} 4 & 3 & 2 & 1 \\ 1 & 2 & 3 & 4 \\ -1 & -4 & 2 & 2 \\ 8 & 6 & 4 & 2 \end{pmatrix}$	0

60	$\begin{pmatrix} 6 & 5 & -2 & -3 \\ 1 & 1 & 1 & 1 \\ \frac{3}{2} & 0 & 3 & 2 \\ 4 & 1 & 0 & \frac{2}{3} \end{pmatrix}$	$\frac{79}{2}$
61	$\begin{pmatrix} 2 & 1 & -3 & 11 \\ 0 & -7 & 21 & 2 \\ 5 & 2 & -6 & 7 \\ 12 & 1/3 & -1 & 0 \end{pmatrix}$	0
62	$\begin{pmatrix} 0 & 30 & 0 & -75 \\ 1 & 2 & 2 & -4 \\ 0 & 45 & 0 & -120 \\ 7 & 59 & -1 & -148 \end{pmatrix}$	3375
63	$\begin{pmatrix} 4 & 7 & 1 & 2 \\ -5 & 3 & 0 & 5 \\ 8 & 0 & -1 & 9/7 \\ -6 & 13 & 1 & 12 \end{pmatrix}$	0
64	$\begin{pmatrix} -3 & 0 & 0 & 0 \\ -4 & 0 & 7 & -5 \\ -7 & -3 & -3 & -5 \\ 5 & 9 & -1 & 8 \end{pmatrix}$	891

65	$\begin{pmatrix} 7 & -9 & 9 & 1 \\ -9 & 0 & -4 & 7 \\ 6 & -5 & 2 & 0 \\ 0 & 6 & -9 & 1 \end{pmatrix}$	1243
66	$\begin{pmatrix} -8 & -10 & 0 & -3 \\ -8 & 0 & 0 & -7 \\ 4 & 4 & 0 & -2 \\ 9 & -3 & 0 & 4 \end{pmatrix}$	0
67	$\begin{pmatrix} 0 & -2 & 3 & 0 \\ 7 & -2 & 5 & 7 \\ 10 & -10 & 5 & 0 \\ 0 & 9 & -7 & -1 \end{pmatrix}$	1090
68	$\begin{pmatrix} -4 & -5 & 0 & -3 \\ -6 & -5 & 1 & -5 \\ 0 & 1 & 0 & 2 \\ 0 & 3 & 6 & -10 \end{pmatrix}$	68
69	$\begin{pmatrix} -6 & 3 & 0 & -4 \\ 7 & -4 & -5 & -5 \\ -8 & 0 & 5 & 3 \\ 0 & 5 & -10 & 0 \end{pmatrix}$	2370

70	$\begin{pmatrix} -1 & -12 & 9 & -5 \\ 0 & -9 & -5 & 0 \\ 0 & 0 & 9 & -8 \\ 0 & 1 & -1 & -7 \end{pmatrix}$	-679
71	$\begin{pmatrix} 11/7 & 7/9 & 1 & 4/9 \\ -17/14 & -1 & -1/2 & -1 \\ 1/7 & 0 & 0 & 0 \\ 41/11 & 7/6 & 3/2 & 7/6 \end{pmatrix}$	$\frac{11}{252}$
72	$\begin{pmatrix} 5 & -1 & 7 & -9 \\ 2 & -3 & -2 & -1 \\ 4 & 0 & 3 & -5 \\ -4 & 1 & -6 & 8 \end{pmatrix}$	23
73	$\begin{pmatrix} 7/51 & -8/15 & 8/51 & 46/255 \\ -3/17 & 5/12 & -1 & -27/45 \\ 0 & -1/2 & 0 & -2/5 \\ 0 & 0 & 0 & -1/5 \end{pmatrix}$	$\frac{19}{1734}$

74	$\begin{pmatrix} 0 & {}^{5}/_{13} & {}^{1}/_{9} & {}^{7}/_{5} \\ 0 & {}^{1}/_{2} & 0 & {}^{1}/_{6} \\ 0 & {}^{1}/_{4} & 0 & -{}^{1}/_{12} \\ -1 & 2 & 0 & 1 \end{pmatrix}$	$\frac{1}{108}$
75	$\begin{pmatrix} -1.5 & 1{,}2 & -8{,}1 & 4{,}6 \\ 5{,}1 & -6{,}2 & 7{,}3 & -9{,}8 \\ -9{,}4 & 3{,}5 & 9{,}4 & -5{,}5 \\ -3{,}7 & -1{,}1 & -12{,}2 & 1{,}1 \end{pmatrix}$	$\cong 3{,}9086$
	calcola il valore di a per il quale la matrice ha determinante nullo	
76	$\begin{pmatrix} a & 1-a \\ 3 & 2 \end{pmatrix}$	$a = \frac{3}{5}$
77	$\begin{pmatrix} 2a-1 & a+1 \\ a-2 & 3a+2 \end{pmatrix}$	$a_1 = -\frac{2}{5}$ $a_2 = 0$
78	$\begin{pmatrix} a^2+a+1 & a \\ a^2+a-1 & a-1 \end{pmatrix}$	*nessun valore*