Sistemi di equazioni esponenziali

PASSED

risolvere i seguenti sistemi di equazioni esponenziali ricordando le condizioni relative alla base di un'esponenziale che deve essere maggiore di zero e diversa da uno e che l'indice di una radice deve essere un numero naturale positivo

1	$\begin{cases} x-y=1 \\ 5^{x+y}=25 \end{cases}$	$\left(\frac{3}{2};\frac{1}{2}\right)$
2	$\begin{cases} x+2y=2 \\ 2^{x+y}=4 \end{cases}$	$(2;0)$
3	$\begin{cases} x+y=7 \\ 2^{x^2-y^2}=128 \end{cases}$	$(4;3)$
4	$\begin{cases} 2x+y=4 \\ 3^{xy}=27 \end{cases}$	$impossibile$
5	$\begin{cases} 2x+3y=0 \\ 5^{x-2y}=1 \end{cases}$	$(0;0)$
6	$\begin{cases} 4x-y=2 \\ 2^{x+2y}=16 \end{cases}$	$\left(\frac{8}{9};\frac{14}{9}\right)$
7	$\begin{cases} x+y=9 \\ 2^{x-y}=8 \end{cases}$	$(6;3)$
8	$\begin{cases} x+y=12 \\ 3^{x-y}=81 \end{cases}$	$(8;4)$
9	$\begin{cases} x-y=5 \\ 4^{x+y}=2 \end{cases}$	$\left(\frac{11}{4};-\frac{9}{4}\right)$
.10	$\begin{cases} x+y=-3 \\ 3^{xy}=9 \end{cases}$	$(-2;-1)\quad(-1;-2)$
11	$\begin{cases} 5^{x+2y}=125 \\ x-2y=7 \end{cases}$	$(5;-1)$
12	$\begin{cases} x-y=2 \\ 3^{xy}=1 \end{cases}$	$(0;-2)\ (2;0)$
13	$\begin{cases} 3^x \cdot 9^y=3 \\ x-y=-5 \end{cases}$	$(-3;2)$

Sistemi di equazioni esponenziali

PASSED

14	$\begin{cases} a^x \cdot a^{2y} = a^6 \\ x - 3y = 1 \end{cases}$	$(4;\ 1)$
15	$\begin{cases} 4^{3x-4} + 8^{2y-4} = 80 \\ y - x = 1 \end{cases}$	$(2;\ 3)$
16	$\begin{cases} x + y = 3 \\ 3^{xy} = 9 \end{cases}$	$(1;\ 2)\quad (2;\ 1)$
17	$\begin{cases} 5x = 3^y \\ 3x = 5^y \end{cases}$	$\left(\frac{1}{15}; -1\right)$
18	$\begin{cases} 3^x + y = 0 \\ 3^{2x} + y = 6 \end{cases}$	$(1; -3)$
19	$\begin{cases} y + 2^{2x} = 0 \\ y + 2^{2x-1} = -8 \end{cases}$	$(2; -16)$
20	$\begin{cases} 9^x + 9 = 10y \\ y = 3^x \end{cases}$	$(0; 1)\quad (2; 9)$
21	$\begin{cases} x + 7^y = 0 \\ 2y + 7^{1-y} = 3 \end{cases}$	*impossibile*
22	$\begin{cases} y - 5^{x-1} = 0 \\ 5 \cdot 3^x = 9y \end{cases}$	$(2; 5)$
23	$\begin{cases} 5^x - 3y = 0 \\ 2 \cdot 5^x + 9y = 1 \end{cases}$	$\left(-1; \frac{1}{15}\right)$
24	$\begin{cases} 34 - 3^x = -y \\ 18y - 3^x = 0 \end{cases}$	$(log_3 36\,; 2)$
25	$\begin{cases} 3x - 2y = 8 \\ 3^{5x+6y} = 81 \end{cases}$	$(2;\ -1)$
26	$\begin{cases} x^{y-3} = 1 \\ y^{x-2} = y \end{cases}$	$(3;\ 3)$
27	$\begin{cases} x^y = y^x \\ x = 2y \end{cases}$	$(4;\ 2)$

Sistemi di equazioni esponenziali

PASSED

28	$\begin{cases} 3^x \cdot 5^y = 75 \\ 3^y \cdot 5^x = 45 \end{cases}$	$(1;\ 2)$
29	$\begin{cases} y^x = 64 \\ y^{x+1} = 4y^{x-1} \end{cases}$	$(6;\ 2)$
30	$\begin{cases} 3^{x-2} \cdot 9^y = 27 \\ x = 8 + y \end{cases}$	$(7; -1)$
31	$\begin{cases} 4^{x+2y} \cdot 16 = 64 \\ 3^{3x} = 9 \end{cases}$	$\left(\frac{2}{3};\ \frac{1}{6}\right)$
32	$\begin{cases} 27^{3-x} + 9^{3y-2} = 36 \\ x - y = 1 \end{cases}$	$(2;\ 1)$
33	$\begin{cases} 3^{x-2} + 9^{y-3} = \frac{82}{9} \\ x - 2y = 0 \end{cases}$	$(4;\ 2)$
34	$\begin{cases} 3^x \cdot 3^5 + 27y = 28 \\ 3^{2x} - y + 2 \cdot 3^{2x} = 0 \end{cases}$	$\left(-2;\ \frac{1}{27}\right)$
35	$\begin{cases} 2^{x+y} = 32 \\ 2^{x \cdot y} = 16 \end{cases}$	$(1;\ 4)\quad (4;\ 1)$
36	$\begin{cases} 2^{x+y-1} = 16 \\ x^2 + y^2 = 17 \end{cases}$	$(1;\ 4)\quad (4;\ 1)$
37	$\begin{cases} 5^{4x} \cdot 125^y = 125 \\ 2 \cdot 2^{6x} = 16^{3y} \end{cases}$	$\left(\frac{1}{2};\ \frac{1}{3}\right)$

38	$\begin{cases} 4^{3x-2y} = 1024 \\ 10^{6x-7y} = 10000 \end{cases}$	$(3;2)$
39	$\begin{cases} 3^{2x-1} \cdot 3^{y-1} = 1 \\ \left(2^{x^2}\right)^4 \cdot 2^{y^2} = 2^{13} \end{cases}$	$(-1;3) \quad \left(\frac{3}{2};-2\right)$
40	$\begin{cases} 9^x + 13x = 0 \\ 9^x = \frac{3}{2} \end{cases}$	*impossibile*
41	$\begin{cases} x + y = 4 \\ a^{x-y} = a^5 \end{cases}$	$\left(\frac{9}{2};-\frac{1}{2}\right)$
42	$\begin{cases} y^x = 16 \\ y^{\frac{1}{x}} = 2 \end{cases}$	$(2;4)$
43	$\begin{cases} 3xy = 0 \\ 3y + \left(\frac{1}{18}\right)^x = 0 \end{cases}$	$\left(0;-\frac{1}{3}\right)$
44	$\begin{cases} a^{x-1} \cdot a^{2x} = 1 \\ a^x = a^2 \cdot a^{12y} \end{cases}$	$\left(\frac{1}{3};-\frac{5}{36}\right)$
45	$\begin{cases} x^y = 125 \\ y^{2-y} = \frac{1}{3} \end{cases}$	$(5;3)$
46	$\begin{cases} \left(\frac{1}{2}\right)^x + y = 0 \\ y^2 - 4 = 0 \end{cases}$	$(-1;-2)$
47	$\begin{cases} x = 3^y \\ \frac{2}{3} \cdot 3^{y+1} - x^2 + 3 = 0 \end{cases}$	$(3;1)$

48	$\begin{cases} a^x \cdot a^y = a^5 \\ a^{x^2-y^2} = a^5 \end{cases}$	$(3;\ 2)$
49	$\begin{cases} a^y \cdot a^y = a^4 \\ a^{x^2-y^2} = a^5 \end{cases}$	$(3; 2)$
50	$\begin{cases} 2^y . 8^x = 4 \\ \frac{3^y}{9^x} = \left(\frac{1}{3}\right)^{4x} \end{cases}$	$(2; -4)$
51	$\begin{cases} 25^x \cdot \sqrt{125^y} = 5 \\ 6^{x+5} = 6^{4-y} \end{cases}$	$(5; -6)$
52	$\begin{cases} 3\left(\frac{1}{2}\right)^{x+1} + y - 1 = 0 \\ y = \left(\frac{1}{2}\right)^{2x} \end{cases}$	$\left(1; \frac{1}{4}\right)$
53	$\begin{cases} x^y = 16 \\ \frac{x}{y} = 2 \end{cases}$	$(4;\ 2)$
54	$\begin{cases} 4^{x+1} \cdot 4^y = \left(\frac{1}{2}\right)^{x-1} \\ x + y = \frac{1}{3} \end{cases}$	$\left(-\frac{5}{3}; 2\right)$

55	$\begin{cases} 1+y=\left(\frac{1}{3}\right)^{\frac{1}{2}x+1} \\ y=\left(\frac{1}{3}\right)^{x} \end{cases}$	*impossibile*
56	$\begin{cases} a^{2+x-y}=a^{2x} \\ b^{2x}\cdot\sqrt{b^{y}}-1=0 \end{cases}$	$\left(-\frac{2}{3};\frac{8}{3}\right)$
57	$\begin{cases} \left(\frac{1}{2}\right)^{x}-4y=0 \\ 4y+3\cdot\left(\frac{1}{2}\right)^{x}=1 \end{cases}$	$\left(2;\frac{1}{16}\right)$
58	$\begin{cases} x^{x+y}\cdot(a^{x})^{y}=a^{2} \\ \left(a^{x^{2}}\right)^{y}=a^{6-xy^{2}} \end{cases}$	$(1;2)$
59	$\begin{cases} 6^{2x+3y}=6^{19} \\ (3^{x})^{1+y}=3^{12} \end{cases}$	$(2;5)$ $\left(9;\frac{1}{3}\right)$
60	$\begin{cases} x+2y=3 \\ 4^{xy}=\left(\frac{1}{16}\right) \end{cases}$	$(-1;2)$ $\left(4;-\frac{1}{2}\right)$
61	$\begin{cases} \left(\frac{1}{12}\right)^{x+1}-3y=0 \\ 2y-\left(\frac{1}{12}\right)^{x}=1 \end{cases}$	*impossibile*

62	$\begin{cases} 3^x - 3\left(\frac{2}{3}\right)^y = -1 \\ 3^{x+1} - 6\left(\frac{2}{3}\right)^y = -\frac{5}{3} \end{cases}$	$(-1; 2)$
63	$\begin{cases} y^{x^2-7x+12} = 1 \\ x + y = 6 \end{cases}$	$(3;\ 3)\ \ (4;\ 2)$
64	$\begin{cases} a^{2x} \cdot a^{3y} = a^{19} \\ (a^x)^{y+1} = a^{12} \end{cases}$	$(2;\ 5)\ \ \left(9; \frac{1}{3}\right)$
65	$\begin{cases} a^{x+y} \cdot a^{xy} = a^5 \\ a^{(x+y)^{xy}} = a^6 \end{cases}$	$(2;\ 1)\ \ (1;\ 2)$
66	$\begin{cases} \frac{4^x}{16^y} = 64 \cdot 256^{x+y} \\ \frac{2^y}{2^x} = \left(\frac{1}{4}\right)^{3x} \end{cases}$	$\left(\frac{1}{9}; -\frac{5}{9}\right)$
67	$\begin{cases} 4^{xy} = \sqrt{4} \\ 9^{-(x+y)} \cdot 27^y = 1 \end{cases}$	$\left(-\frac{1}{2}; -1\right)\ \ \left(\frac{1}{2}; 1\right)$
68	$\begin{cases} 8^x = \frac{\sqrt[3]{8}}{8^{-y}} \\ \sqrt[6]{16} = 2^{xy} \end{cases}$	$\left(-\frac{2}{3}; -1\right)\ \ \left(1; \frac{2}{3}\right)$
69	$\begin{cases} 3^{x^2+y^2} = 243 \\ 10^x \cdot 10^5 = \frac{10^4}{10^y} \end{cases}$	$(1; -2)\ \ (-2; 1)$

70	$\begin{cases} m^{2x} = \dfrac{m^{15}}{m^{y}} \\ \dfrac{n^{x}}{n^{3y}} - n^{4} = 0 \end{cases}$	$(7;1)$
71	$\begin{cases} m^{6y} : m^{5x} = 1 : m^{7} \\ n^{2y} = n^{81} : n^{15x} \end{cases}$	$(5;3)$
72	$\begin{cases} \sqrt[9]{m^{12x+12}} = m^{x+2y} \\ n^{2x+y} = \sqrt[4]{n^{5(3+y)}} \end{cases}$	$(2;1)$
73	$\begin{cases} x^{2} + y^{2} = 17 \\ \left(2^{\frac{1}{x}}\right)^{y} = 16 \end{cases}$	$(-1;-4)\quad(1;4)$
74	$\begin{cases} \sqrt{3^{x}} \cdot \sqrt[3]{3^{y}} = \dfrac{1}{\sqrt[3]{9}} \\ x^{2} + y^{2} = 5 \end{cases}$	$(-2;1)\quad\left(\frac{2}{13};-\frac{29}{13}\right)$
75	$\begin{cases} x^{2} + xy + y^{2} = 4 \\ b^{x} b^{y} = b^{2} \end{cases}$	$(2;0)\quad(0;2)$
76	$\begin{cases} \sqrt{a^{x}} \cdot \sqrt[3]{a^{y}} = a^{5} \\ \sqrt[3]{b^{x}} \cdot \sqrt{b^{y}} = b^{5} \end{cases}$	$(6;6)$
77	$\begin{cases} \sqrt[3]{a^{x}} = \sqrt[4]{a^{y}} \\ \sqrt{b^{x}} \cdot \sqrt[4]{b^{y}} = b^{5} \end{cases}$	$(6;8)$

78	$\begin{cases} \sqrt[x]{a} : \sqrt[y]{a^{-1}} = a^{\frac{7}{12}} \\ \sqrt[x]{a^3} : \sqrt[y]{a^4} = 1 \end{cases}$	$(3;\ 4)$
79	$\begin{cases} a^x \cdot a^{5y} = a^{28} \\ a^{7x} : a^6 = a^{3y} \end{cases}$	$(3;\ 5)$
80	$\begin{cases} x^2 + y^2 = \dfrac{13}{36} \\ 2^{x+y} = \sqrt[6]{32} \end{cases}$	$\left(\frac{1}{2};\ \frac{1}{3}\right)\ \left(\frac{1}{3};\ \frac{1}{2}\right)$
81	$\begin{cases} 3^x = 2y + 1 \\ 3^{2x} - 9y^2 = 0 \end{cases}$	$\left(log_3 \frac{3}{5}; -\frac{1}{5}\right)\ \ (1;1)$
82	$\begin{cases} x^y = y^x \\ \dfrac{x}{y} = \dfrac{5}{3} \end{cases}$	$\left(\frac{25}{27}\sqrt{15};\ \frac{5}{9}\sqrt{15}\right)$
83	$\begin{cases} 3^x - 2y = 0 \\ \dfrac{5}{2}y - 3^x = 2 \end{cases}$	$(log_3 8\,; 4)$
84	$\begin{cases} a^{2y^2} - a^{4x} = 0 \\ \dfrac{b^{4x} \cdot \sqrt{b^{2x}}}{b^{\frac{3}{2}}} = \left(\dfrac{1}{b}\right)^y \end{cases}$	$\left(\frac{1}{2}; -1\right)\ \left(\frac{9}{50}; \frac{3}{5}\right)$
85	$\begin{cases} \sqrt{a^{1-x}} \cdot \sqrt[3]{a^{x+4y}} = a^2 \\ b^3 \cdot \sqrt[4]{b^x} : \sqrt[3]{b^{2(2+y)}} = \sqrt{b} \end{cases}$	$\left(-\frac{5}{2}; \frac{13}{16}\right)$
86	$\begin{cases} m^{2(x-1)} = m^{2y} \\ x^2 - 2y = 3 \end{cases}$	$\left(1+\sqrt{2};\ \sqrt{2}\right)\ \left(1-\sqrt{2}; -\sqrt{2}\right)$

87	$\begin{cases} -\left(\frac{1}{3}\right)^x + \frac{1}{3} = 12y \\ 2y - \left(\frac{1}{9}\right)^x = 0 \end{cases}$	$\left(log_3 6 ; \frac{1}{72}\right)$
88	$\begin{cases} \sqrt[3]{a^x} : \sqrt[7]{a^{2y}} = a^{-2} \\ \sqrt[4]{a^x} : \sqrt[3]{a^{2y}} = a^{-11} \end{cases}$	$(12;\ 21)$
89	$\begin{cases} \sqrt[3]{a^x} \cdot \sqrt[4]{a^y} = \sqrt[6]{a^5} \\ \sqrt[4]{b^x} \cdot \sqrt[5]{b^y} = \sqrt[20]{b^{13}} \end{cases}$	$(1;\ 2)$
90	$\begin{cases} \sqrt[3]{5^{x+4y}} \cdot \sqrt{5^{1-x}} = 25 \\ 8\sqrt[4]{2^x} : \sqrt[3]{4^{2+y}} = \sqrt{2} \end{cases}$	$\left(-\frac{5}{2}; \frac{13}{16}\right)$
91	$\begin{cases} 4^{xy} - 9 \cdot 2^{xy} + 8 = 0 \\ 3^{x+y} \cdot 9^{x-y} = 1 \end{cases}$	$(0;\ 0)\ \ (1;\ 3)\ \ (-1;\ -3)$
92	$\begin{cases} 36x^2 + 36y^2 = 13 \\ 8^{xy} = \sqrt[6]{8} \end{cases}$	$\left(\frac{1}{2};\ \frac{1}{3}\right)\ \ \left(-\frac{1}{2};-\frac{1}{3}\right)$ $\left(\frac{1}{3};\ \frac{1}{2}\right)\ \ \left(-\frac{1}{3};-\frac{1}{2}\right)$
93	$\begin{cases} \sqrt[x+1]{a^3} : a^{-2-y} = a^7\sqrt[4]{a^{-1}} \\ \sqrt[x+1]{a^7} : \sqrt{a^{y-5}} = a^2\sqrt[4]{a^3} \end{cases}$	$(3;\ 4)$
94	$\begin{cases} y^x = 64 \\ \sqrt[x-1]{y^{x+1}} = 16 \end{cases}$	$(3;\ 4)$

95	$\begin{cases} \sqrt[5x]{a^2} : \sqrt[2y]{a^3} = \sqrt[10]{a^{-3}} \\ \sqrt[2x]{a^5} \cdot \sqrt[2y]{a^3} = \sqrt[4]{a^7} \end{cases}$	$(2;\ 3)$
96	$\begin{cases} \sqrt[x+y]{3^x} \cdot \sqrt[x-y]{3^y} = \sqrt[x^2-y^2]{9^{xy}} \\ 4^y \cdot 4^x = 256 \end{cases}$	*impossibile*
97	$\begin{cases} \sqrt[2x]{a^2} \cdot \sqrt[3y]{a^5} = \sqrt[6]{a^{13}} \\ \sqrt[3x]{a^2} \cdot \sqrt[5y]{a^3} = \sqrt[15]{a^{14}} \end{cases}$	$(2;\ 1)$
98	$\begin{cases} 3^{x-y} = \frac{1}{3} \\ 4^y \cdot 2^z = \frac{1}{16} \\ 3^x = 27^z \end{cases}$	$\left(-\frac{18}{7}; -\frac{11}{7}; -\frac{6}{7}\right)$
99	$\begin{cases} x + y + z = 16 \\ 3^x = 3^{1+2z} \\ x^z = y^{2z} \end{cases}$	$(9; 3;\ 4)$
100	$\begin{cases} 2^{\frac{x}{y-8}} = 16 \\ 9^z = 3^{\frac{120}{y}} \\ x + z = 3y \end{cases}$	$(-24;\ 2;\ 30)\quad (88;\ 30;\ 2)$
101	$\begin{cases} a^{7xy} = a^x \cdot a^y \\ a^{8xz} = a^x \cdot a^z \\ a^{9zy} = a^z . a^y \end{cases}$	$\left(\frac{1}{3}; \frac{1}{4}; \frac{1}{5}\right)\quad (0;\ 0;\ 0)$