ESERCIZI IN PIÙ

ESERCIZI DI FINE CAPITOLO

Risolvi le seguenti equazioni nell'incognita x.

1 $\frac{3x^2+5}{x}+x-1=\frac{5}{x}$ $\left[0 \text{ non accettabile}; \frac{1}{4}\right]$

2 $\frac{8}{x-1}-3=\frac{6}{x+1}-\frac{x^2+x-3}{x^2-1}$ $\left[\frac{7}{2}; -2\right]$

3 $\frac{20}{x^2-4}=\frac{5-x}{x+2}+\frac{2x-3}{2-x}$ [impossibile]

4 $(x+\sqrt{3})^2+(x-\sqrt{3})^2=\frac{10(x+\sqrt{3})(x-\sqrt{3})}{3}$ $[\pm 2\sqrt{3}]$

5 $\sqrt{3}(x^2-1)=\sqrt{2}x^2$ $[\pm\sqrt{3+\sqrt{6}}]$

6 $\frac{x}{\sqrt{2}}-\frac{2}{x}=\frac{x}{2}-\frac{\sqrt{2}}{x}$ $[\pm\sqrt[4]{8}]$

7 $\frac{5(x-1)}{x}=\frac{3}{x-2}-\frac{x-13}{4x-2x^2}$ $\left[\frac{11}{5}; \frac{3}{2}\right]$

8 $3\left(1-\frac{1}{1+x}\right)=1-\frac{1}{1-x^2}$ $\left[0; \frac{3}{2}\right]$

9 $\frac{x^2\sqrt{3}+1}{x-1}=\frac{2(\sqrt{3}+3)}{\sqrt{3}}$ [impossibile]

10 $\frac{4(x-2)}{5x-26}=\frac{x+2}{x-4}$ $[-14; 6]$

11 $\frac{x}{x+3}=\frac{6}{x-3}-\frac{27-x^2}{9-x^2}$ $\left[-3 \text{ non accettabile}; \frac{15}{2}\right]$

12 $2x(x-3)+\frac{1}{2}\left(\frac{1}{3}x^2-1\right)+\frac{2x-x^2}{6}=-\frac{1}{3}\left(17x+\frac{21}{2}\right)$ [impossibile]

13 $2x+\frac{(x-3)^2}{2}-6+\frac{2}{3}(4x-5)=\frac{(1-x)(x+2)}{3}-\frac{1}{6}+2(x-1)$ $[\pm 2]$

14 $x+\frac{19}{25}+6\left(2+\frac{x}{5}\right)\left(\frac{1}{5}x-2\right)=4+2\left(\frac{x}{5}-6\right)-\frac{6}{25}+3\left(\frac{x}{5}-4\right)$ $\left[\pm\frac{5\sqrt{2}}{2}\right]$

15 $\frac{(4-x)(x+5)}{6}-\frac{(2-x)(x+1)}{4}=\frac{(3-x)(x+2)}{8}-\frac{(x+1)(x+2)}{6}+\frac{83-x}{24}$ $\left[\pm\frac{5}{3}\right]$

16 $\frac{17x-34x^2}{9}+\left(\frac{1}{2}-2x\right)^2-\frac{1}{24}=x^2\left(x-\frac{1}{2}\right)-x\left(x-\frac{1}{3}\right)^2$ [impossibile]

17 $(1+x)(1-bx)+(1-x)(1+bx)=2x^2(1+b+b^2)$ $\left[b\neq -1: \pm\frac{1}{1+b}; b=-1: \text{imp.}\right]$

18 $\dfrac{a(x^2+1)}{a+1} - 2x = 0$

$\left[a = -1$: priva di signif.; $a = 0$: 0; $a \neq 0 \ \wedge \ a \geq -\dfrac{1}{2}$: $\dfrac{a+1 \pm \sqrt{1+2a}}{a}$; $a < -\dfrac{1}{2}$: imp.$\right]$

19 $x^2 - \left(\dfrac{2}{a} - 3\right)x - \dfrac{3}{a} + \dfrac{1}{a^2} + 2 = 0$ $\left[a = 0$: priva di signif.; $a \neq 0$: $-\dfrac{2a-1}{a}, \dfrac{1-a}{a}\right]$

20 $\dfrac{x^2}{a} - 3a = 2x$ $[a = 0$: priva di signif.; $a \neq 0$: $-a, 3a]$

21 $x^2 - \dfrac{2x+1}{3} - \dfrac{x-2a}{a} = x\left(2x - \dfrac{1}{a}\right)$ $\left[a = 0$: priva di signif.; $a \neq 0$: $-\dfrac{5}{3}, 1\right]$

22 $\dfrac{x^2}{a^2} = x^2 - \dfrac{2x}{a^2}$ $\left[a = 0$: priva di signif.; $a = 1 \vee a = -1$: 0; $a \neq 0 \wedge a \neq \pm 1$: $0, \dfrac{2}{a^2-1}\right]$

23 $\dfrac{x}{3-a} - \dfrac{2}{a-3} = \dfrac{x^2 - ax - 12}{a^2 - 9} + \dfrac{x-2}{a+3}$ $[a = \pm 3$: priva di signif.; $a \neq \pm 3$: $0, -a]$

24 $\dfrac{2x}{a-3x} + \dfrac{a-3x}{2x} - \dfrac{5}{2} = \dfrac{2a^2 - 11ax + 4x^2}{6x^2 - 2ax}$ $\left[a = 0$: 0 non accett.; $a \neq 0$: $\dfrac{3a}{16}, \dfrac{a}{2}\right]$

25 $\dfrac{x-3a}{2x+a} + \dfrac{2x}{2x-a} = 2 - \dfrac{2x^2 - 5ax + 4a^2}{a^2 - 4x^2}$ [impossibile]