Esercizi sulle equazioni di primo grado

1. $2(x+1)(x-1)-3(x-1)=2(x+2)^2-4x$ $[x=-1]$
2. $(x-1)(x+3)-[(x-1)-2x]^2=3(x+1)-4$ $[x=-1]$
3. $-2x(x-1)+3(x-1)-[(x-1)-x]^2=-2(x+1)^2$ $\left[x=\frac{2}{9}\right]$
4. $2(x+1)^2+3(x+2)(x-2)+x^2=(2x+1)(3x-2)-1$ $\left[x=\frac{7}{5}\right]$
5. $1-(x+1)^2+(-x+1)(x+1)=-2(x+3)^2-2(x+1)$ $\left[x=-\frac{7}{4}\right]$
6. $-[2(x+1)-3]+\{-2[3(x-1)]-3x\}=(x+1)^2-x^2-2x$ $\left[x=\frac{6}{11}\right]$
7. $-[(x+1)(x-1)-(x-1)^2]=\{2[(x+3)^2-6x]-2\}-2x^2$ $[x=-7]$
8. $-x(x+3)(x-3)-(x-2)^2=-(x-1)^3+(2x-1)^2-8x^2$ $\left[x=\frac{3}{10}\right]$
9. $(x+1)^2-(x-1)(x+1)-2=-(x-1)^2+x(x-1)-(-1-x)$ $[\textit{indeterminata}]$
10. $\frac{1}{2}x+5=\frac{x+2}{4}-3x+\frac{1}{4}(x-1)$ $\left[x=-\frac{19}{12}\right]$
11. $\frac{x-3}{4}-(x+2)=\frac{2x-1}{2}+x-1$ $\left[x=-\frac{5}{11}\right]$
12. $\frac{1}{3}x+\frac{x-4}{2}-1=\frac{3x-1}{4}+\frac{1}{2}x-2$ $\left[x=-\frac{9}{5}\right]$
13. $\frac{2(x+1)}{3}-\frac{1}{6}x=2-\frac{3-x}{6}-2x+3$ $\left[x=\frac{23}{14}\right]$
14. $\frac{1}{3}(x-6)+\frac{1}{2}(x+2)=\frac{1}{4}(x-2)+\frac{1}{3}x$ $[x=2]$
15. $\frac{2(x-1)}{3}+\frac{3}{4}x-1=\frac{3(x-1)}{6}+\frac{1}{3}(x-6)$ $\left[x=-\frac{10}{7}\right]$
16. $\frac{(x+1)(x-1)}{2}-1+\frac{1}{4}x=\frac{x^2}{2}+\frac{1+x}{3}-1$ $[x=-10]$
17. $\frac{(x+1)^2}{3}-\frac{(x+2)(x-2)}{3}=2(x+1)-\frac{1}{4}x-3$ $\left[x=\frac{32}{13}\right]$
18. $-\frac{x+3}{2}+\frac{(x-3)(x+3)}{4}=\frac{(x-2)^2}{4}+\frac{1}{2}x+1$ $[\textit{impossibile}]$
19. $\frac{1}{2}x+4-\frac{(x+4)^2}{2}-1=(x-1)^2-\frac{(x-1)}{3}-\frac{3x^2}{2}$ $\left[x=-\frac{38}{7}\right]$
20. $\left(\frac{x}{4}+\frac{x}{2}\right)^2+\frac{2x}{3}+\frac{(x-1)(x+1)}{12}-\frac{2x}{6}=\frac{2(x^2-3)}{4}+\frac{7}{48}x^2$ $\left[x=-\frac{17}{4}\right]$
21. $(x-1)^2+\frac{(x-2)(x+2)}{3}=\frac{3(x-1)}{2}+\frac{1}{4}x+\frac{4x^2}{3}$ $\left[x=\frac{14}{45}\right]$
22. $\frac{(x-1)^2}{3}+\frac{(x-1)(x+1)}{6}=\frac{3(x-1)}{4}+\frac{(x-2)^2}{2}$ $\left[x=\frac{13}{7}\right]$
23. $\frac{(x+1)^2}{3}+\frac{3(x-2)(x+2)}{2}=\frac{4(x+1)^2}{3}-\frac{1}{4}[(x^2+20)-3x^2]$ $[x=-1]$
24. $\left(\frac{1}{2}x-1\right)^2+\frac{(x-3)(x+3)}{4}=\frac{(x-1)^2}{3}+\left(\frac{1}{3}x-1\right)\left(\frac{3}{4}x-2\right)-\frac{1}{12}x^2$ $\left[x=\frac{43}{13}\right]$

25. $\frac{1}{2}(x+2)^2-\frac{(x+4)^2}{2}-\frac{1}{4}x=\{[1-(x-1)^2+x^2]-2x\}-\frac{(x-5)}{2}$ $\left[x=-\frac{34}{7}\right]$

26. $\left(\frac{2x}{3}-1\right)^2-2x+x^2=\left(\frac{2}{3}x-2\right)\left(\frac{2}{3}x+2\right)+\frac{1}{2}(3x-4)+(x-1)^2$ $\left[x=\frac{36}{17}\right]$

27. $\left(\frac{x-1}{2}\right)\left(\frac{3+x}{4}\right)=\frac{2x-\frac{1}{3}}{4}+\frac{x}{2}-\frac{\frac{(x-2)}{2}}{4}+\frac{x^2}{8}$ $\left[x=-\frac{13}{15}\right]$

28. $\frac{x}{2}+[(x+1)^2-x^2-x-1]^3=\frac{1}{4}x+(x-1)^3-\frac{\frac{(x-2)(x+2)}{2}}{\frac{1}{4}}+5x^2$ $\left[x=-\frac{28}{11}\right]$

29. $\frac{(x-1)}{2}-(x^2+x-1)^2+(x^2-1)(x^2+1)+x(-x+2x^2)=\frac{x-1}{3}$ $[x=1]$

30. $1-\left[\frac{(x-1)(x+1)-x^2+1}{2}\right]\left[\frac{(x-1)^2-(x-2)(x+2)-1+2x}{4}\right]=\frac{1}{3}+\frac{3(x-1)}{6}-\frac{x}{4}-\frac{(x-2)}{2}$ $\left[x=-\frac{2}{3}\right]$