Equazioni fratte (di primo, secondo e terzo grado)

Risolvi le seguenti equazioni fratte.

1. $\frac{2x+1}{x-2} = 1$

$[x = -3]$

2. $\frac{3x+2}{x-4} = 3$

$[impossibile]$

3. $-\frac{2}{x} - \frac{1}{x+1} = 2$

$[x_1 = -2, x_2 = -\frac{1}{2}]$

4. $\frac{5(x+1)}{x-1} - \frac{1}{3} = 1 + \frac{4x+1}{2x-2}$

$[x = -\frac{7}{2}]$

5. $\frac{7}{x+5} - \frac{1}{x-5} = \frac{2}{x^2-25}$

$[x = 7]$

6. $\frac{5x-2}{5x+2} - \frac{5x+2}{5x-2} = \frac{80}{25x^2-4}$

$[x = -2]$

7. $\frac{x-\frac{1}{2}}{x-1} - \frac{4}{3x} = \frac{x+\frac{1}{2}}{x+1} + \frac{3}{4} + \frac{x}{x^2-1}$

$[x = -\frac{16}{9}]$

8. $\frac{2}{x^3} - \frac{5-(x+2)^2}{x^3+3x^2} - \frac{1}{x+3} = \frac{4(x-1)}{x^3+3x^2}$

$[x = -\frac{6}{5}]$

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

$[x_1 = 0, x_2 = 2]$

10. $\frac{x-2}{x^2}\cdot\left(\frac{x}{x^2-4}+\frac{3x}{x+2}\right)+\frac{2}{x}=\frac{2}{x-2}+x\left(\frac{1}{x}-\frac{1}{x+2}\right)+\frac{x+1}{x^2-4}$

$\left[x=\frac{1}{6}\right]$

11. $2\left[\frac{x}{x^2-6x+5}+\frac{3x}{x(x-1)}+\frac{1}{x-5}\right]-\frac{1}{x-1}=3\left[\frac{1}{x}+\frac{x+1}{x(x-1)}\right]+\frac{x+1}{x^2-6x+5}$

$[x=-1]$

12. $\frac{x^4-2x^3+x^2-x-2}{x^2+3x+2}=\frac{x-2}{x+1}$

$[x_1=1, x_2=2]$

13. $\frac{x^3-15x^2-105}{x^2-4x}=\frac{71}{4-x}$

$[x_1=3, x_2=5, x_3=7]$

14. $\frac{4x}{x-2}-\frac{2x}{x-3}-\frac{x^2}{x^2-5x+6}=\frac{x+1}{x-2}$

$\left[x=\frac{1}{2}\right]$

15. $\frac{x}{x+1}-\frac{x+1}{x+2}-\frac{x+2}{x+1}-\frac{x+3}{x+2}=0$

$[impossibile]$

16. $\frac{x(x+1)+(x+2)(x-2)}{x^2-4}+\frac{x+1}{x+2}=\frac{x+1}{x-2}-\frac{x(x+1)}{x^2-4}+\frac{x}{x+2}$

$[impossibile]$

17. $\frac{1}{x^2}-\frac{1}{x}\cdot\frac{x+1}{x^2-9}+\frac{1}{x^2}\frac{6x^2+11}{x^2-9}=\frac{1}{x-3}+\frac{1}{x^2-9}-\frac{1}{x+3}$

$[x_1=-2, x_2=1]$

18. $\frac{\frac{x^2-2x+1}{2}}{\frac{x^2-4}{2}}-\frac{16x^2}{(x-1)(x^2-4)}=\frac{x+1}{x-1}-\frac{(x-1)(x+1)}{x^2-3x+2}+\frac{x-1}{x-2}$

$\left[x_1=\frac{1}{6}, x_2=\frac{1}{3}\right]$

19. $\frac{\frac{3}{x}}{2x+1}-\frac{1}{x-1}=-\frac{2x-1}{2x^2-x-1}-\frac{\frac{3}{x}}{x-1}-\frac{2}{2x+1}$

$\left[x=-\frac{5}{2}\right]$

20. $\frac{1}{x}+\frac{2}{x+1}-\frac{x+1}{x^2-x}=\frac{1}{x-1}-\frac{x}{x^2-1}+\frac{2x-1}{x^2+x}$

$\left[x=-\frac{3}{2}\right]$