ESERCIZI PROPOSTI

1. Risolvere algebricamente in **R** *le seguenti equazioni:*

- $x+\frac{2-x}{12}+\frac{5x-2}{4}=3x-\frac{x-1}{3}$ $\left[\mathbf{R}.\ x=-\frac{4}{3}\right]$
- $(x-2)^2+\frac{x+2}{4}-\frac{x-1}{3}=x^2-\frac{49x-58}{12}$ $[\mathbf{R}.\ \text{identità}]$
- $\frac{1}{2}x(2x+1)+\frac{x-1}{4}=\frac{x+2}{6}+(x-1)\left(x+\frac{1}{3}\right)$ $\left[\mathbf{R}.\ x=\frac{1}{5}\right]$
- $4x^2-11x+6=0$ $\left[\mathbf{R}.\ x=\frac{3}{4}\cup x=2\right]$
- $(x-2)^2+2(x-2)-3=0$ $[\mathbf{R}.\ x=-1\cup x=3]$
- $x\left(2-\frac{1}{2}x\right)-7=x\left(\frac{1}{2}x-1\right)+12$ $[\mathbf{R}.\ \varnothing]$
- $4x^4-35x^2-9=0$ $[\mathbf{R}.\ x=\pm 3]$
- $x^4=-100+29x^2$ $[\mathbf{R}.\ x=\pm 2\cup x=\pm 5]$
- $3x^2\left(x^6+3x^2\right)=-4$ $[\mathbf{R}.\ \varnothing]$
- $x^8-5x^4+6=0$ $[\mathbf{R}.\ x=\pm\sqrt[4]{2}\cup x=\pm\sqrt[4]{3}]$

2. Risolvere algebricamente ed interpretare geometricamente le seguenti equazioni e disequazioni:

- $2x-3=3x+1$ $\left[\mathbf{R}.\ x=-4\right]$
- $x^2-7x=-12$ $\left[\mathbf{R}.\ x=3\cup x=4\right]$
- $|3-x|=1$ $\left[\mathbf{R}.\ x=2\cup x=4\right]$
- $|2x-3|=|x|$ $\left[\mathbf{R}.\ x=1\cup x=3\right]$
- $5x+3\geq -2$ $\left[\mathbf{R}.\ [-1,+\infty)\right]$
- $1-2x\leq -5x$ $\left[\mathbf{R}.\ \left(-\infty,-\frac{1}{3}\right]\right]$
- $x^2>x$ $\left[\mathbf{R}.\ (-\infty,0]\cup[1,+\infty)\right]$
- $x^2+4>(x+2)^2$ $\left[\mathbf{R}.\ (-\infty,0)\right]$
- $2x^2+6x+5\geq -2x-3$ $\left[\mathbf{R}.\ (-\infty,+\infty)\right]$
- $x^2+4x+3<2x+5$ $\left[\mathbf{R}.\ \left(-1-\sqrt{3},-1+\sqrt{3}\right)\right]$
- $\dfrac{x-3}{x+2}\geq 0$ $\left[\mathbf{R}.\ (-\infty,-2)\cup[3,+\infty)\right]$

- $\dfrac{2-x}{x-3} \le x-5$ $\left[\mathbf{R}.\ (3,+\infty)\right]$
- $3x^2+1<x^4-3$ $\left[\mathbf{R}.\ (-\infty,-2)\cup(2,+\infty)\right]$
- $|x+2| \le 1$ $\left[\mathbf{R}.\ [-3,1]\right]$
- $|x-3| \ge 2x$ $\left[\mathbf{R}.\ (-\infty,1]\right]$
- $|x^2-9| > |x+3|$ $\left[\mathbf{R}.\ (-\infty,2)\cup(4,+\infty)\right]$