ROMANIAN MATHEMATICAL MAGAZINE

Solve for real numbers:

$$(x^2-3x+1)^2=2x-1$$

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$$(x^2-3x+1)^2=2x-1$$

$$(x^2-3x+1)^2-x^2=-x^2+2x-1$$

$$(x^2-3x+1-x)(x^2-3x+1+x)+(x^2-2x+1)=0$$

$$(x^2-4x+1)(x-1)^2+(x-1)^2=0$$

$$(x-1)^2(x^2-4x+2)=0$$

$$x-1=0\Rightarrow x_1=x_2=1$$

$$x^2-4x+2=0\Rightarrow\begin{cases}x_3=\dfrac{4+\sqrt{8}}{2}=2+\sqrt{2}\\ x_4=\dfrac{4-\sqrt{8}}{2}=2-\sqrt{2}\end{cases}$$