ES 125 $3(x-3)^4 - 24(x-3)^2 - 27 = 0$

pongo $(x-3)^2 = y$ da cui $3y^2 - 24y - 27 = 0$ $y = \frac{12 \pm \sqrt{144+81}}{3} =$

$= \frac{12 \pm \sqrt{225}}{3} = \frac{12 \pm 15}{3} = \begin{cases} y_1 = -\frac{3}{3} = -1 \\ y_2 = \frac{27}{3} = 9 \end{cases}$

- per $y = -1$ $(x-3)^2 = -1$ IMPOSSIBILE
- per $y = 9$ $(x-3)^2 = 9$ da cui $(x-3) = \pm 3$
  - a) $x - 3 = -3$ $x = 0$
  - b) $x - 3 = 3$ $x = 6$

ES 127 $\left(\frac{x^2-2}{x^2+2}\right)^2 - 5\left(\frac{x^2-2}{x^2+2}\right) + 4 = 0$ CE $x^2+2 \neq 0$

$x^2 \neq -2$ SEMPRE

pongo $\frac{x^2-2}{x^2+2} = y$ $y^2 - 5y + 4 = 0$ $y = \frac{5 \pm \sqrt{25-16}}{2} = \frac{5 \pm \sqrt{9}}{2} =$

$= \frac{5 \pm 3}{2} = \begin{cases} y_1 = 4 \\ y_2 = 1 \end{cases}$

- $y = 4$ $\frac{x^2-2}{x^2+2} = 4$ $x^2 - 2 = 4x^2 + 8$ $-3x^2 = 10$ $x^2 = -\frac{10}{3}$ impossib
- $y = 1$ $\frac{x^2-2}{x^2+2} = 1$ $x^2 - 2 = x^2 + 2$ $-2 = 2$ IMPOSSIBILE

$S = \emptyset$

128 $\left(x^2 + \frac{1}{x^2}\right)^2 + \left(x^2 + \frac{1}{x^2}\right) - 6 = 0$ CE $x \neq 0$

pongo $x^2 + \frac{1}{x^2} = y$ da cui $y^2 + y - 6 = 0$ $y = \frac{-1 \pm \sqrt{1+24}}{2} =$

$= \frac{-1 \pm 5}{2} = \begin{cases} y_1 = \frac{-6}{2} = -3 \\ y_2 = \frac{4}{2} = 2 \end{cases}$

- $y = -3$ $x^2 + \frac{1}{x^2} = -3$ da cui $\frac{x^4+1}{x^2} = \frac{-3x^2}{x^2}$ $x^4 + 3x^2 + 1 = 0$

pongo $x^2 = t$ $t^2 + 3t + 1 = 0$ $t = \frac{-3 \pm \sqrt{9-4}}{2} = \frac{-3 \pm \sqrt{5}}{2}$

a) $t = \frac{-3-\sqrt{5}}{2}$ $x^2 = \frac{-3-\sqrt{5}}{2}$ IMPOSS

b) $t = \frac{-3+\sqrt{5}}{2}$ $x^2 = \frac{-3+\sqrt{5}}{2}$ IMPOSS perché $\frac{-3+\sqrt{5}}{2} < 0$

CONTINUA

ES 125 $3(x-3)^4 - 24(x-3)^2 - 27 = 0$

pongo $(x-3)^2 = y$ da cui $3y^2 - 24y - 27 = 0$ $y = \frac{12 \pm \sqrt{144+81}}{3} =$

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- poi $y = -1$ $(x-3)^2 = -1$ IMPOSSIBILE
- poi $y = 9$ $(x-3)^2 = 9$ da cui $(x-3) = \pm 3$
  - a) $x - 3 = -3$ $x = 0$
  - b) $x - 3 = 3$ $x = 6$

ES 127 $\left(\frac{x^2-2}{x^2+2}\right)^2 - 5\left(\frac{x^2-2}{x^2+2}\right) + 4 = 0$ CE $x^2+2 \neq 0$ $x^2 \neq -2$ SEMPRE

pongo $\frac{x^2-2}{x^2+2} = y$ $y^2 - 5y + 4 = 0$ $y = \frac{5 \pm \sqrt{25-16}}{2} = \frac{5 \pm \sqrt{9}}{2} =$

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- $y = 4$ $\frac{x^2-2}{x^2+2} = 4$ $x^2 - 2 = 4x^2 + 8$ $-3x^2 = 10$ $x^2 = -\frac{10}{3}$ IMPOSSIB
- $y = 1$ $\frac{x^2-2}{x^2+2} = 1$ $x^2 - 2 = x^2 + 2$ $-2 = 2$ IMPOSSIBILE

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128 $\left(x^2 + \frac{1}{x^2}\right)^2 + \left(x^2 + \frac{1}{x^2}\right) - 6 = 0$ CE $x \neq 0$

pongo $x^2 + \frac{1}{x^2} = y$ da cui $y^2 + y - 6 = 0$ $y = \frac{-1 \pm \sqrt{1+24}}{2} =$

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$y = -3$ $x^2 + \frac{1}{x^2} = -3$ da cui $\frac{x^4+1}{x^2} = \frac{-3x^2}{x^2}$ $x^4 + 3x^2 + 1 = 0$

pongo $x^2 = t$ $t^2 + 3t + 1 = 0$ $t = \frac{-3 \pm \sqrt{9-4}}{2} = \frac{-3 \pm \sqrt{5}}{2}$

a) $t = \frac{-3-\sqrt{5}}{2}$ $x^2 = \frac{-3-\sqrt{5}}{2}$ IMPOSS

$\frac{-3+\sqrt{5}}{2} < 0$ perché