

$$\left| |x^2 - 1| - 2x \right| = 1$$

Esempio di equazione con valore assoluto
incapsulato

$$|x^2 - 1| - 2x = 1$$

(1)

$$\vee \quad |x^2 - 1| - 2x = -1$$

(2)

$$\textcircled{1} \quad \left\{ \begin{array}{l} x^2 - 1 \geq 0 \\ x^2 - 1 = 2x + 1 \end{array} \right. \quad \vee \quad \left\{ \begin{array}{l} x^2 - 1 < 0 \\ x^2 - 1 = -2x - 1 \end{array} \right.$$

$$\left\{ \begin{array}{l} x \leq -1 \vee x \geq 1 \\ x^2 - 2x - 2 = 0 \end{array} \right. \quad \vee \quad \left\{ \begin{array}{l} -1 < x < 1 \\ x^2 + 2x = 0 \end{array} \right.$$

$$\left\{ \begin{array}{l} x \leq -1 \vee x \geq 1 \\ x = 1 - \sqrt{3} \vee x = 1 + \sqrt{3} \\ \quad \approx -0,7 \quad \quad \approx 2,7 \end{array} \right. \quad \vee \quad \left\{ \begin{array}{l} -1 < x < 1 \\ x = 0 \vee x = -2 \end{array} \right.$$

$$\left| x = 1 + \sqrt{3} \quad \vee \quad x = 0 \right|$$

$$\textcircled{2} \quad \left\{ \begin{array}{l} x^2 - 1 \geq 0 \\ x^2 - 1 = 2x - 1 \end{array} \right. \quad \vee \quad \left\{ \begin{array}{l} x^2 - 1 < 0 \\ x^2 - 1 = -2x + 1 \end{array} \right.$$

$$\left\{ \begin{array}{l} x \leq -1 \vee x \geq 1 \\ x^2 - 2x = 0 \end{array} \right. \quad \vee \quad \left\{ \begin{array}{l} -1 < x < 1 \\ x^2 + 2x - 2 = 0 \end{array} \right.$$

$$\left\{ \begin{array}{l} x \leq -1 \vee x \geq 1 \\ x = 0 \vee x = 2 \end{array} \right. \quad \vee \quad \left\{ \begin{array}{l} -1 < x < 1 \\ x = -1 - \sqrt{3} \vee x = -1 + \sqrt{3} \\ \quad \approx -2,7 \quad \quad \approx 0,7 \end{array} \right.$$

$$\left| x = 2 \quad \vee \quad x = -1 + \sqrt{3} \right|$$

L'equazione è soddisfatta per $x \in \{0, -1 + \sqrt{3}, 2, 1 + \sqrt{3}\}$