

INDIVIDUA E CLASSIFICA I PUNTI DI DISCONTINUITÀ DELLE FUNZIONI: (4)

$$1) f(x) = \frac{|x^2 - 16|}{x - 4}$$

$$2) f(x) = \frac{\sqrt{x} - 2}{x^2 - 25}$$

$$3) f(x) = \frac{x^2 + 5x + 6}{x^3 + 2x^2 + 4x + 8}$$

$$1) f(x) = \frac{|x^2 - 16|}{x - 4} = \begin{cases} \frac{x^2 - 16}{x - 4} & \text{se } x^2 - 16 > 0 \rightarrow x \leq -4 \vee x > 4 \\ \frac{-(x^2 - 16)}{x - 4} & \text{se } -4 < x < 4 \end{cases}$$

$$f(x) = \begin{cases} x + 4 & \text{se } x \leq -4 \vee x > 4 \\ -(4 + x) & \text{se } -4 < x < 4 \end{cases}$$

$\begin{array}{c} -4 \qquad \qquad 4 \\ \hline x + 4 \quad | \quad -x - 4 \quad | \quad x + 4 \end{array}$

$$\lim_{x \rightarrow 4^+} x + 4 = 8$$

$8 \neq -8$ ma finiti $\Rightarrow x = 4$ discontinua.
1^a SPECIE

$$\lim_{x \rightarrow 4^-} -x - 4 = -8$$

$$\lim_{x \rightarrow -4^-} x + 4 = -4 + 4 = 0$$

$x = -4$ continua!

$$\lim_{x \rightarrow -4^+} -x - 4 = 4 - 4 = 0$$

$$2) D: \{ \mathbb{R} - \{ \pm 5 \} \mid x > 0 \} \quad x_0 = 5 \quad \lim_{x \rightarrow 5^+} \frac{\sqrt{x} - 2}{x^2 - 25} = \frac{\sqrt{5} - 2}{0} = \frac{\text{m}}{0} \quad \infty$$

$x = 5$ DISCONT.
2^a SPECIE

$$D: [0, 5) \cup (5, +\infty)$$

$$3) f(x) = \frac{(x+2)(x+3)}{x^2(x+2) + 4(x+2)} = \frac{(x+2)(x+3)}{(x+2)(x^2+4)} \quad D: \mathbb{R} - \{-2\}$$

$$\lim_{x \rightarrow -2^\pm} f(x) = \frac{0}{0} \quad \text{si} = \lim_{x \rightarrow -2^\pm} \frac{(x+3)}{(x+2)(x^2+4)} = \frac{1}{8} \quad x = -2$$

$x = -2$
DISCONT. III SPECIE