

$$\lim_{x \rightarrow -\infty} \frac{1}{(\sqrt{1-x} - \sqrt{x^2-1})} \cdot \frac{\sqrt{1-x} + \sqrt{x^2-1}}{\sqrt{1-x} + \sqrt{x^2-1}} = \frac{\sqrt{1-x} + \sqrt{x^2-1}}{(1-x) - (x^2-1)}$$

$$= \frac{\sqrt{1-x} + \sqrt{x^2-1}}{1-x-x^2+1} = \frac{\sqrt{1-x} + \sqrt{x^2-1}}{-x^2-x+2}$$

$$= \frac{\sqrt{x^2 \left(\frac{1}{x^2} - \frac{1}{x} \right)} + \sqrt{x^2 \left(1 - \frac{1}{x^2} \right)}}{x^2 \left(-1 - \frac{1}{x} + \frac{2}{x^2} \right)}$$

$$= \frac{\overset{|x|}{\sqrt{x^2}} \sqrt{\frac{1}{x^2} - \frac{1}{x}} + \overset{|x|}{\sqrt{x^2}} \sqrt{1 - \frac{1}{x^2}}}{x^2 \left(-1 - \frac{1}{x} + \frac{2}{x^2} \right)}$$

$$= \frac{-x \sqrt{\frac{1}{x^2} - \frac{1}{x}} - x \sqrt{1 - \frac{1}{x^2}}}{x^2 \left(-1 - \frac{1}{x} + \frac{2}{x^2} \right)}$$

$$= \frac{-\sqrt{\frac{1}{x^2} - \frac{1}{x}} - \sqrt{1 - \frac{1}{x^2}}}{x \left(-1 - \frac{1}{x} + \frac{2}{x^2} \right)} = \frac{-1}{+\infty} = 0$$

$$\lim_{x \rightarrow +\infty} (\sqrt{x-1} - \sqrt{x}) = \infty (\infty - \infty) = \text{forma indeterminata.}$$

$$= \lim_{x \rightarrow +\infty} x\sqrt{x-1} - x\sqrt{x} = \lim_{x \rightarrow +\infty} \sqrt{x^2} \sqrt{x-1} - \sqrt{x^2} \sqrt{x} = \lim_{x \rightarrow +\infty} \sqrt{x^2(x-1)} - \sqrt{x^3}$$

$$= \lim_{x \rightarrow +\infty} \frac{\sqrt{x^2(x-1)} - \sqrt{x^3}}{\sqrt{x^2(x-1)} + \sqrt{x^3}} = \lim_{x \rightarrow +\infty} \frac{x^2(x-1) - x^3}{\sqrt{x^2(x-1)} + \sqrt{x^3}} =$$

$$= \lim_{x \rightarrow +\infty} \frac{x^3 - x^2 - x^3}{\sqrt{x^2(x-1)} + \sqrt{x^3}} = \lim_{x \rightarrow +\infty} \frac{-x^2}{\sqrt{x^2(x-1)} + \sqrt{x^3}} = \frac{-\infty}{+\infty} \text{ f. indeterminata}$$

NUM. ORDINE 2 R/p a x } mi aspetto $-\infty$
 DENOM. ORDINE $\frac{3}{2} = 1,5$ R/p a x

(Non applico de l'Hospital perché complice il con.

iii Cerco di mettere in evidenza un x^2 al denomin. per semplificarlo con quello del numeratore.

$$= \lim_{x \rightarrow +\infty} \frac{-x^2}{\sqrt{x^4 \left(\frac{x^2}{x^4} (x-1) \right)} + \sqrt{x^4 \left(\frac{x^3}{x^4} \right)}} = \lim_{x \rightarrow +\infty} \frac{-x^2}{\sqrt{x^4} \sqrt{\frac{1}{x^2} (x-1)} + \sqrt{x^4} \sqrt{\frac{1}{x}}}$$

$$= \lim_{x \rightarrow +\infty} \frac{-x^2}{|x^2| \sqrt{\frac{1}{x} + \frac{1}{x^2}} + |x^2| \sqrt{\frac{1}{x}}} = \lim_{x \rightarrow +\infty} \frac{-x^2}{x^2 \left(\sqrt{\frac{1}{x} + \frac{1}{x^2}} + \sqrt{\frac{1}{x}} \right)} = \lim_{x \rightarrow +\infty} \frac{-1}{\sqrt{\frac{1}{x} + \frac{1}{x^2}} + \sqrt{\frac{1}{x}}}$$

$$= \frac{-1}{0} = -\infty \checkmark$$