3/11/2018

272 $\lim_{x \to -\infty} \frac{8x+2}{x-\sqrt{x^2-3}} = \frac{8(-\infty)+2}{-\infty-\sqrt{(-\infty)^2-3}} =$

$= \frac{-\infty}{-\infty}$ F. I.

$$\frac{8x+2}{x-\sqrt{x^2-3}} \cdot \frac{x+\sqrt{x^2-3}}{x+\sqrt{x^2-3}} = \frac{(8x+2)(x+\sqrt{x^2-3})}{x^2-(x^2-3)} =$$

$$= \frac{8x^2+8x\sqrt{x^2-3}+2x+2\sqrt{x^2-3}}{\cancel{x^2}-\cancel{x^2}+3}$$

GIUSTO, MA NON CI SIAMO!

$$\frac{8x+2}{x-\sqrt{x^2-3}} = \frac{x\left(8+\frac{2}{x}\right)}{x-\sqrt{x^2\left(1-\frac{3}{x^2}\right)}} = \frac{x\left(8+\frac{2}{x}\right)}{x-|x|\sqrt{1-\frac{3}{x^2}}} =$$

$$= \frac{x\left(8+\frac{2}{x}\right)}{x-(-x)\sqrt{1-\frac{3}{x^2}}} = \frac{x\left(8+\frac{2}{x}\right)}{x+x\sqrt{1-\frac{3}{x^2}}}$$

perché $x \to -\infty$ (quindi è negativo) quindi $|x| = -x$

$\sqrt{x^2} = |x|$

$$|x| = \begin{cases} x & \text{se } x \geq 0 \\ -x & \text{se } x < 0 \end{cases}$$

$$= \frac{\cancel{x}\left(8+\frac{2}{x}\right)}{\cancel{x}\left(1+\sqrt{1-\frac{3}{x^2}}\right)} \longrightarrow \frac{8}{1+\sqrt{1}} = \frac{8}{2} = \boxed{4}$$

$\frac{2}{x} \to 0$, $\frac{3}{x^2} \to 0$