$$\lim_{x \to +\infty} \sqrt{3x^2+2x+2} - \sqrt{3x^2+x}$$

$$\lim_{x \to 0} (\cos x)^{\left(\frac{1}{\operatorname{sen} x}\right)^2}$$

$$\lim_{x \to 1} \frac{\ln(2x-1)}{x^2-\sqrt{x}}$$

$$\lim_{x \to +\infty} \left(\sqrt{3x^2+2x+2} - \sqrt{3x^2+x}\right) = \underbrace{(\infty - \infty)}_{\text{INDETERMINACIÓN}} = \lim_{x \to +\infty} \frac{\left(\sqrt{3x^2+2x+2} - \sqrt{3x^2+x}\right)\left(\sqrt{3x^2+2x+2} + \sqrt{3x^2+x}\right)}{\sqrt{3x^2+2x+2} + \sqrt{3x^2+x}} =$$

$$= \lim_{x \to +\infty} \frac{\left(\sqrt{3x^2+2x+2}\right)^2 - \left(\sqrt{3x^2+x}\right)^2}{\sqrt{3x^2+2x+2} + \sqrt{3x^2+x}} = \lim_{x \to +\infty} \frac{\cancel{3x^2}+2x+2-(\cancel{3x^2}+x)}{\sqrt{3x^2+2x+2} + \sqrt{3x^2+x}} =$$

$$= \lim_{x \to +\infty} \frac{x+2}{\sqrt{3x^2+2x+2} + \sqrt{3x^2+x}} = \lim_{x \to +\infty} \frac{\frac{x}{x} + \frac{2}{x}}{\sqrt{\frac{3x^2}{x^2} + \frac{2x}{x^2} + \frac{2}{x^2}} + \sqrt{\frac{3x^2}{x^2} + \frac{x}{x^2}}} = \lim_{x \to +\infty} \frac{1 + 2/x}{\sqrt{3+\frac{2}{x}+\frac{2}{x^2}} + \sqrt{3+\frac{1}{x}}} =$$

$$= \frac{1}{\sqrt{3}+\sqrt{3}} = \boxed{\frac{1}{2\sqrt{3}}}$$

$$\lim_{x\to 0}(\cos x)^{\left(\frac{1}{\operatorname{sen} x}\right)^2} = \cos 0^{\left(\frac{1}{\operatorname{sen} 0}\right)^2} = \underbrace{\left(1^{\infty}\right)}_{\text{INDETERMINACIÓN}} \overset{(*)}{=} e^{\lim_{x\to 0}\left(\frac{1}{\operatorname{sen} x}\right)^2(\cos x - 1)} =$$

$$= e^{\lim_{x\to 0}\frac{\cos x - 1}{\operatorname{sen}^2 x}} = e^{\frac{0}{0}} \overset{\text{L'Hôpital}}{=} e^{\lim_{x\to 0}\frac{-\cancel{\operatorname{sen} x}}{2\cancel{\operatorname{sen} x}\cdot\cos x}} = e^{\lim_{x\to 0}\frac{-1}{2\cos x}} = e^{-1/2} = \boxed{\frac{1}{\sqrt{e}}}$$

(*) UTILIZAMOS $\lim_{x\to a} f(x)^{g(x)} = e^{\lim_{x\to a} g(x)\left[f(x)-1\right]}$

$$\lim_{x\to 1}\frac{\ln(2x-1)}{x^2-\sqrt{x}} = \frac{\ln(2\cdot 1-1)}{1^2-\sqrt{1}} = \left(\frac{0}{0}\right) \overset{\text{L'Hôpital}}{=} \lim_{x\to 1}\frac{\frac{1}{2x-1}\cdot 2}{2x-\frac{1}{2\sqrt{x}}} = \frac{\frac{2}{1}}{2-\frac{1}{2}} = \frac{2}{3/2} = \boxed{\frac{4}{3}}$$