

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

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

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

$$4) \lim_{x \rightarrow -\infty} \frac{x}{|x| + 1} \quad (-1)$$

$$5) \lim_{x \rightarrow +\infty} \sqrt{x^2 + x - 1} - x \quad (1/2)$$

$$6) \lim_{x \rightarrow +\infty} \frac{3x - 2}{\sqrt{4x^2 + x}} \quad \left(\frac{3}{2}, \text{risp. } -\frac{3}{2}\right)$$

$$7) \lim_{x \rightarrow 0} x^2 \cot x \quad (0)$$

$$8) \lim_{x \rightarrow 0} \frac{\arcsin^2(5^x - 1)}{1 - \cos^2 4x} \quad \left(\frac{\log^2 5}{16}\right)$$

$$9) \lim_{x \rightarrow 0} \frac{\log_2(1 + \sin x) - \arcsin 5x^2}{3 - 3\cos \sqrt{x}} \quad \left(\frac{2 \log_2(e)}{3}\right)$$

$$10) \lim_{x \rightarrow +\infty} \frac{e^x + 4}{3e^x - 1} \quad (\text{porre } y := e^x) \quad \left(\frac{1}{3}\right)$$

$$11) \lim_{x \rightarrow 0} \frac{x - \sin 2x}{x + \sin 3x} \quad \left(-\frac{1}{4}\right)$$

$$12) \lim_{x \rightarrow 0} \frac{3 \log_4(1 + \arcsin 9x^2) + 5x^6}{\sin^2(2x) - e^{x^4} + 1} \quad \left(\frac{27}{4} \log_4 e\right)$$