

Usando la definizione di limite, verificare che:

$$1. \lim_{x \rightarrow 4} x^2 = 16$$

$$2. \lim_{x \rightarrow -3} x^4 = 81$$

$$3. \lim_{x \rightarrow +\infty} \frac{x+1}{x-4} = 1$$

$$4. \lim_{x \rightarrow \left(\frac{\pi}{2}\right)^-} \operatorname{tg} x = +\infty$$

$$5. \lim_{x \rightarrow +\infty} \frac{x^3 - 4x^2}{2 - 3x} = -\infty$$

$$6. \lim_{x \rightarrow 5} \frac{x^3 - 4x^2}{2 - 3x} = -\frac{25}{13}$$

$$7. \lim_{x \rightarrow \left(\frac{2}{3}\right)^+} \frac{x^3 - 4x^2}{2 - 3x} = +\infty$$

$$8. \lim_{x \rightarrow 3} \frac{x^2 - 4x + 3}{x - 3} = 2$$

$$9. \lim_{x \rightarrow -\infty} \sqrt{\frac{1-x}{x^2}} = 0$$

$$10. \lim_{x \rightarrow +\infty} \frac{x^2 - 2}{x} = +\infty$$

$$11. \lim_{x \rightarrow +\infty} \frac{2x + \cos x}{x - \sin x} = 2.$$