

$$\lim_{x \rightarrow \sqrt{2}} \frac{x - \sqrt{2}}{x^2 - 2}$$

(21)

نقره x المرافق

$$\text{sol } \lim_{x \rightarrow \sqrt{2}} \frac{x - \sqrt{2}}{x^2 - 2} \cdot \frac{x + \sqrt{2}}{x + \sqrt{2}}$$

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

$$= \frac{1}{2\sqrt{2}}$$

Ex

$$\lim_{x \rightarrow 1} \frac{x^2 - 1}{\sqrt{x} - 1}$$

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

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

$$= \lim_{x \rightarrow 1} (x + 1)(\sqrt{x} + 1)$$

$$= (1 + 1)(1 + 1)$$

$$= 2 \times 2 = 4$$

$$\underline{\text{EX}} \lim_{x \rightarrow 1} \frac{\sqrt{x+3} - 2}{x-1} \quad (22)$$

SOL نضرب المرافق

$$= \frac{\sqrt{x+3} - 2}{x-1} \cdot \frac{\sqrt{x+3} + 2}{\sqrt{x+3} + 2}$$

$$= \frac{x+3-4}{(x-1)(\sqrt{x+3}+2)} = \frac{x-1}{(x-1)(\sqrt{x+3}+2)}$$

$$= \frac{1}{\sqrt{1+3}+2} = \frac{1}{4}$$

$$\underline{\text{EX}} \lim_{x \rightarrow 4} \frac{x^2-16}{\sqrt{x+5}-3}$$

$$= \frac{x^2-16}{\sqrt{x+5}-3} \cdot \frac{\sqrt{x+5}+3}{\sqrt{x+5}+3}$$

$$= \frac{(x-4)(x+4)(\sqrt{x+5}+3)}{(x+5-9)}$$

$$= \frac{(x-4)(x+4)(\sqrt{x+5}+3)}{(x-4)}$$

$$= \lim_{x \rightarrow 4} (x+4)(\sqrt{x+5}+3)$$

$$= (4+4)(\sqrt{9}+3)$$

$$= 8(6) = 48$$