

مسابقات

$$\lim_{x \rightarrow 1} \frac{x^m - vx + p}{2x^r - ax + p} = \frac{0}{0} \xrightarrow{\text{بسط}} \frac{(x-1)(x^m - vx + p)}{(x-1)(2x^r - ax + p)} = \frac{x^m - vx + p}{2x^r - ax + p} \quad -1$$

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$$\lim_{x \rightarrow 0} \frac{|3x-1| - |3x+1|}{x} = \frac{0}{0} \xrightarrow{\text{بسط}} \frac{3x^2 - 4x + 1 - 4x^2 - 1}{x} = -12x \quad -2$$

$$\frac{|3x-1| - |3x+1|}{x} \times \frac{|3x-1| + |3x+1|}{|3x-1| + |3x+1|} = \frac{(3x-1)^2 - (3x+1)^2}{2x} = \frac{-12x}{2x}$$

$$\lim_{x \rightarrow F} \frac{x - F}{\sqrt{x} - F} = \frac{0}{0} \xrightarrow{\text{بسط}} \frac{x - F}{\sqrt{x} - F} \times \frac{\sqrt{x} + F}{\sqrt{x} + F} = \frac{(x - F)(\sqrt{x} + F)}{(\sqrt{x} - F)(\sqrt{x} + F)} = \frac{x - F}{\sqrt{x} + F} \quad -3$$

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$$\lim_{x \rightarrow F} \frac{x - \sqrt{x}}{x^2 - m - 4} = \frac{0}{0} \xrightarrow{\text{بسط}} \frac{x - \sqrt{x}}{x^2 - m - 4} \times \frac{x + \sqrt{x}}{x + \sqrt{x}} = \frac{x^2 - x}{(x-2)(x^2 + 4)} \quad -5$$

$$\frac{x}{(x-2)(x^2+4)} = \frac{1}{V}$$

$$\lim_{x \rightarrow 1} \frac{1 - \sqrt{x}}{x - \sqrt{a-x}} = \frac{0}{0} \xrightarrow{\text{بسط}} \frac{1 - \sqrt{x}}{x - \sqrt{a-x}} \times \frac{1 + \sqrt{x}}{1 + \sqrt{x}} \times \frac{1 + \sqrt{a-x}}{1 + \sqrt{a-x}} \quad -6$$

$$\frac{(1-x) \times F}{(F-a+x) \times F} = \frac{(1-x) \times F}{(x-1) \times F} = -1]$$

$$\lim_{x \rightarrow F} \frac{\sqrt{x+4} - F}{\sqrt{ax+v} - F} = \frac{0}{0} \xrightarrow{\text{كسر}} \frac{\sqrt{x+4} - F}{\sqrt{ax+v} - F} = \frac{\frac{x+4}{\sqrt{x+4}} - F}{\frac{ax+v}{\sqrt{ax+v}} - F} = \frac{\frac{x}{\sqrt{x+4}}}{\frac{ax}{\sqrt{ax+v}}} = \frac{1}{F_0} \quad -7$$

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$$\lim_{n \rightarrow 1} \frac{\sqrt{4n+5n} - 7}{\sqrt{n} - 1} = \frac{0}{0} \xrightarrow{\text{hop}} \frac{7 + \frac{1}{\sqrt{2n}}}{\frac{1}{\sqrt{2n}}} = \frac{7 + \frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = -7$$

$$\lim_{n \rightarrow \pi} \frac{1 + \cos^n x}{\sin^n x} = \frac{0}{0} \xrightarrow{\text{Polynom}} \frac{(1 + \cos^n x)(1 - \cos^n x - \cos^n x)}{(1 - \cos^n x)(1 + \cos^n x)} = -1$$

$$\left. \frac{1}{\sqrt{x}} \right\}$$

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \tan x}{\sin x - \cos x} = \frac{0}{0} \xrightarrow{\text{Polynom}} \frac{1 - \frac{\sin x}{\cos x}}{\sin x - \cos x} = \frac{\cos x - \sin x}{\cos x} = \frac{-1}{\cos x}$$

$$\left. \frac{-1}{\sqrt{x}} = \frac{1}{\sqrt{x}} = \sqrt{x} \right\}$$

$$\lim_{n \rightarrow \frac{\pi}{2}} \frac{\tan^n x - 1}{\cos^n x} = \frac{0}{0} \xrightarrow{\text{Polynom}} \frac{\frac{\sin^n x}{\cos^n x} - 1}{\cos^n x - \sin^n x} = \frac{\sin^n x - \cos^n x}{\cos^n x - \sin^n x} = -1$$

$$\left. \frac{1}{\sqrt{x} - \cos^n x} = -1 \right\}$$