$$f(x)=\frac{x^2-5x-1}{x^3}$$

$f'\left(\frac{1}{a}\right)$, $f'(-1)$, $f'(1)$ חשב את

$\frac{25}{123}$

$$f'=\frac{(x^2-5x-1)'\cdot x^3-(x^3)'\cdot(x^2-5x-1)}{(x^3)^2}$$

$$=\frac{(2x-5)\cdot x^3-3x^2\cdot(x^2-5x-1)}{x^6}$$

$$=\frac{2x^4-5x^3-3x^4+15x^3+3x^2}{x^6}$$

$$=\frac{-x^4+10x^3+3x^2}{x^6}$$

$$=\frac{-x^2+10x+3}{x^4}$$

$$f'\left(\frac{1}{a}\right)=\frac{-\left(\frac{1}{a}\right)^2+10\cdot\left(\frac{1}{a}\right)+3}{\left(\frac{1}{a}\right)^4}$$

$$=\frac{-\left(\frac{1}{a^2}-\frac{10}{a}-3\right)}{\frac{1}{a^4}}$$

לכפל פנימי ואחר כך a^2

$$=\frac{-\left(\frac{1-10a-3a^2}{a^2}\right)}{\frac{1}{a^4}}$$

$$=-a^2(1-10a-3a^2)$$

$$\boxed{=3a^4+10a^3-a^2}$$

$$f'(1)=\frac{-1^2+10\cdot1+3}{1^4}=\frac{-1+10+3}{1}=\boxed{12}$$

$$f'(-1)=\frac{-1^2+10(-1)+3}{(-1)^4}=\frac{-1-10+3}{1}=\boxed{-8}$$