Határértékek számítások: I.

(1A)

$$\lim_{+\infty}\left(x^2-5x+2\right)=\lim_{+\infty} \underset{+\infty}{x^2}\left(\underset{1}{1}-\underset{0}{\frac{5}{x}}+\underset{0}{\frac{2}{x^2}}\right)=+\infty$$

(1) $$\lim_{+\infty}\left(4x^3-5x^2+2\right)=\lim_{+\infty} \underset{+\infty}{x^3}\left(\underset{4}{4}-\underset{0}{\frac{5}{x}}+\underset{0}{\frac{2}{x^3}}\right)=+\infty$$

(2) $$\lim_{-\infty}\left(4x^3-5x^2+2\right)=\lim_{-\infty} \underset{-\infty}{x^3}\left(\underset{4}{4}-\underset{0}{\frac{5}{x}}+\underset{0}{\frac{2}{x^3}}\right)=-\infty$$

(3) $$\lim_{\pm\infty}\frac{3x^2-4x+1}{-4x^2+5x-2}=\lim_{\pm\infty}\frac{\cancel{x^2}\left(3-\frac{4}{x}+\frac{1}{x^2}\right)}{\cancel{x^2}\left(-4+\frac{5}{x}-\frac{2}{x^2}\right)}=$$

$$=\lim_{\pm\infty}\frac{3-\overset{0}{\frac{4}{x}}+\overset{0}{\frac{1}{x^2}}}{-4+\underset{0}{\frac{5}{x}}-\underset{0}{\frac{2}{x^2}}}=\frac{3}{-4}=-\frac{3}{4}$$

(4) $$\lim_{\pm\infty}\frac{2x+3}{x^2-6x}=\lim_{\pm\infty}\frac{\cancel{x}\left(\overset{2}{2}+\overset{0}{\frac{3}{x}}\right)}{\underset{\pm\infty}{x^2}\left(\underset{1}{1}-\underset{0}{\frac{6}{x}}\right)}=\frac{2}{\pm\infty}=0$$

(5) $$\lim_{\pm\infty}\frac{x^4-3x^2+7}{2x^3+6x-1}=\lim_{\pm\infty}\frac{\cancel{x^4}\left(1-3/x^2+\frac{7}{x^4}\right)}{\cancel{x^3}\left(2+\frac{6}{x^2}-\frac{1}{x^3}\right)}=$$

$$\lim_{\pm\infty}\frac{\overset{\pm\infty}{x}\left(\overset{1}{1}-\overset{0}{\frac{3}{x^2}}+\overset{0}{\frac{7}{x^4}}\right)}{\underset{2}{2}+\underset{0}{\frac{6}{x^2}}-\underset{0}{\frac{1}{x^3}}}=\pm\infty$$