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## GRANICA FUNKCJI - ĆWICZENIA

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### Zadanie 1.

Policz poniższą granicę funkcji

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| (a) $\lim_{x \rightarrow 3} \frac{x^2 - 5x + 6}{x^2 - 8x + 15}$                      | (m) $\lim_{x \rightarrow 2^-} \frac{-3}{ 4 - x^2 }$                                |
| (b) $\lim_{x \rightarrow -2} \frac{\sqrt{x^2 + 21} - 5}{x + 2}$                      | (n) $\lim_{x \rightarrow 1} (1 - x) \operatorname{tg}\left(\frac{\pi x}{2}\right)$ |
| (c) $\lim_{x \rightarrow 0^+} \frac{x - \sqrt{x}}{x + \sqrt{x}}$                     | (o) $\lim_{x \rightarrow \infty} \frac{x + \cos(x)}{2x + \sin(2x)}$                |
| (d) $\lim_{x \rightarrow 0} x \sin\left(\frac{1}{x}\right)$                          | (p) $\lim_{x \rightarrow 0^-} 2^{2^{\frac{1}{x}}}$                                 |
| (e) $\lim_{x \rightarrow 1^-} \frac{x(x-2)}{x^2 - 1}$                                | (q) $\lim_{x \rightarrow 0^+} 2^{2^{\frac{1}{x}}}$                                 |
| (f) $\lim_{x \rightarrow -\infty} 2x + \sqrt{4x^2 - 6x + 5}$                         | (r) $\lim_{x \rightarrow 25} \frac{\sqrt{x} - 5}{x - 25}$                          |
| (g) $\lim_{x \rightarrow -\infty} \frac{3x^5 - x^4 + 2x + 7}{4 - x^2 + 2x^3 - 5x^5}$ | (s) $\lim_{x \rightarrow 1} \frac{x^6 - 1}{1 - x^2}$                               |
| (h) $\lim_{x \rightarrow \infty} \frac{x + \sin(x)}{x}$                              | (t) $\lim_{x \rightarrow 0} \frac{\sqrt{a+x} - \sqrt{a}}{x}$                       |
| (i) $\lim_{x \rightarrow 0} \frac{(1+x)(1+2x)(1+3x) - 1}{x}$                         | (u) $\lim_{x \rightarrow 0} \frac{\sin(2x)}{\sin(3x)}$                             |
| (j) $\lim_{x \rightarrow 64} \frac{\sqrt[3]{x} - 4}{\sqrt{x} - 8}$                   | (v) $\lim_{x \rightarrow 0} \frac{\sqrt[5]{x^4 + x^3 + 1} - 1}{x}$                 |
| (k) $\lim_{x \rightarrow \infty} \sqrt{x + \sqrt{x + \sqrt{x}}} - x$                 | (w) $\lim_{x \rightarrow 0^+} \sin\left(\frac{1}{x}\right)$                        |
| (l) $\lim_{x \rightarrow 0} \frac{x \sin(x)}{x + 2x^2}$                              | (x) $\lim_{x \rightarrow 0} \frac{2^x - 1}{x}$                                     |