

Ex. 1 Find the domain of the function $f(x) = \sqrt{\frac{x-1}{x+1} + 1}$.

Ex. 2 Solve the following equations.

a) $\log_7^2 x - \log_7 x - 2 = 0$

b) $\cos 2x = 0$

Ex. 3 Calculate the following limits.

a) $\lim_{n \rightarrow \infty} (n - \sqrt{n^2 + 5n})$

b) $\lim_{n \rightarrow \infty} \left(\frac{n+1}{n-3}\right)^{2n-1}$

c) $\lim_{x \rightarrow \pi} \frac{1 + \cos x}{\sin^2 x}$

d) $\lim_{x \rightarrow 0^+} \operatorname{arccot}(\ln x)$

Ex. 4 Find local extremum values of $(x) = \sqrt[3]{x^2} + 1$ and intervals in which the function increases or decreases.

Ex. 5 Write the sandwich theorem for sequences.