

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

Ex. 2 Solve the following equations.

a) $\log_2^2 x - \log_2 x - 2 = 0$

b) $\sin 2x = 1$

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) $\lim_{x \rightarrow 0^+} \arctan(\ln x)$

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.