

Worksheet 7
10/17/2022

1. Find the root between 1 and 2 of the cubic polynomial $x^3 - 3x - 1$ with allowable error 0.01.

2. Find the following limits and justify each step by indicating the appropriate Limit Law(s).

(a) $\lim_{x \rightarrow -\infty} \frac{2x^2 + x - 1}{3x^2 + 1}$

(b) $\lim_{x \rightarrow \infty} \frac{x^2}{1 - x}$

(c) $\lim_{x \rightarrow \infty} \frac{x + 1}{x^2 - 1}$

(d) $\lim_{x \rightarrow 1^-} \frac{x + 1}{x^2 - 1}$

(e) $\lim_{x \rightarrow -\infty} \frac{\sqrt{x^2 + 1}}{x - 1}$

(f) $\lim_{x \rightarrow \infty} \frac{\sin x}{x}$

(g) $\lim_{x \rightarrow \infty} (\sqrt{x^2 + x + 1} - x)$

(h) $\lim_{x \rightarrow -\infty} (\sqrt{x^2 + x + 1} - x)$