Quiz #7

MATH 126-102 — Calculus II
Thursday, Oct 29, 2026

Please print your name:

Problem 1. (10 points) Determine the following limits. (No need to show work!)

(a) $\lim_{n\to\infty} \frac{3}{\sqrt{n}} =$

(b) $\lim_{n\to\infty} \frac{4n^3+5n^2+2}{3n^2+7n+1} =$

(c) $\lim_{n\to\infty} \frac{4n^3+5n^2+2}{2n^3+7n+1} =$

(d) $\lim_{n\to\infty} \frac{n^3+\sqrt{n^6+3n}}{4+2n^2+5n^3} =$

(e) $\lim_{n\to\infty} \frac{n^3+\sqrt{n^6+3n}}{4+2n^2} =$

(f) $\lim_{n\to\infty} \frac{e^{4n}}{n^3} =$

(g) $\lim_{n\to\infty} \frac{e^{4n}}{n^{300}} =$

(h) $\lim_{n\to\infty} \frac{\ln(n)}{2n} =$

(i) $\lim_{n\to\infty} \sqrt{3+\frac{2n^2}{1+n^2}} =$

(j) $\lim_{n\to\infty} \cos\left(\pi - \frac{2}{n}\right) =$

Solution.

Armin Straub
straub@southalabama.edu

(a) $\lim_{n\to\infty} \frac{3}{\sqrt{n}} = 0$

(b) $\lim_{n\to\infty} \frac{4n^3+5n^2+2}{3n^2+7n+1} = \infty$

(c) $\lim_{n\to\infty} \frac{4n^3+5n^2+2}{2n^3+7n+1} = 2$

(d) $\lim_{n\to\infty} \frac{n^3+\sqrt{n^6+3n}}{4+2n^2+5n^3} = \lim_{n\to\infty} \frac{n^3+\sqrt{n^6}}{5n^3} = \lim_{n\to\infty} \frac{2n^3}{5n^3} = \frac{2}{5}$

(e) $\lim_{n\to\infty} \frac{n^3+\sqrt{n^6+3n}}{4+2n^2} = \infty$

(f) $\lim_{n\to\infty} \frac{e^{4n}}{n^3} = \infty$

(g) $\lim_{n\to\infty} \frac{e^{4n}}{n^{300}} = \infty$

(h) $\lim_{n\to\infty} \frac{\ln(n)}{2n} = 0$

(i) $\lim_{n\to\infty} \sqrt{3+\frac{2n^2}{1+n^2}} = \sqrt{5}$

(j) $\lim_{n\to\infty} \cos\left(\pi - \frac{2}{n}\right) = \cos(\pi) = -1$ □

Armin Straub
straub@southalabama.edu