Quiz #7

MATH 126-101 — Calculus II
Thursday, Oct 29, 2026

Please print your name:

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

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

(b) $\lim_{n\to\infty} \frac{7n^2-8n+1}{3n^2+5n+7} =$

(c) $\lim_{n\to\infty} \frac{7n^2-8n+1}{2n^3+5n+7} =$

(d) $\lim_{n\to\infty} \frac{n^2+\sqrt{n^4+5n}}{3+8n^2} =$

(e) $\lim_{n\to\infty} \frac{n^2+\sqrt{n^4+5n}}{3+8n^2+2n^3} =$

(f) $\lim_{n\to\infty} \frac{e^{3n}}{n^2} =$

(g) $\lim_{n\to\infty} \frac{e^{3n}}{n^{100}} =$

(h) $\lim_{n\to\infty} \frac{\ln(n)}{3n} =$

(i) $\lim_{n\to\infty} \cos\left(\pi+\frac{1}{n^2}\right) =$

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

Solution.

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

(b) $\lim_{n\to\infty} \frac{7n^2-8n+1}{3n^2+5n+7} = \frac{7}{3}$

(c) $\lim_{n\to\infty} \frac{7n^2-8n+1}{2n^3+5n+7} = 0$

(d) $\lim_{n\to\infty} \frac{n^2+\sqrt{n^4+5n}}{3+8n^2} = \lim_{n\to\infty} \frac{n^2+\sqrt{n^4}}{8n^2} = \lim_{n\to\infty} \frac{2n^2}{8n^2} = \frac{1}{4}$

(e) $\lim_{n\to\infty} \frac{n^2+\sqrt{n^4+5n}}{3+8n^2+2n^3} = 0$

(f) $\lim_{n\to\infty} \frac{e^{3n}}{n^2} = \infty$

(g) $\lim_{n\to\infty} \frac{e^{3n}}{n^{100}} = \infty$

(h) $\lim_{n\to\infty} \frac{\ln(n)}{3n} = 0$

(i) $\lim_{n\to\infty} \cos\left(\pi + \frac{1}{n^2}\right) = \cos(\pi) = -1$

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

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