Math 229 Quiz 7a

You may use only Julia or `math229.github.io` – no other websites.

NAME: Solutions

Problem 1. Let $f(x) = \dfrac{\sin(3x)}{x^4}$ and $g(x) = \dfrac{1}{x^5}$ for $7.5 < x < 12$.

a. How many times do the two curves intersect in this interval? 4

b. Find the zeros of $f(x)$, accurate to five decimal places, in this interval.

8.37758
9.42478
10.47198
11.51917

c. Find the x–coordinates where $f(x)$ and $g(x)$ intersect in this interval, accurate to five decimal places.

8.41728
9.38921
10.50376
11.49013

Problem 2. Let $f(x) = \dfrac{\cos(6x^2) - 1}{\sin^4(2x/\pi)}$.

a. Compute the EXACT answer (symbolically) for $\lim_{x \to 0} f(x)$.

$$-\frac{9\pi^4}{8}$$

Math 229 Quiz 7b

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NAME: Solutions

Problem 1. Let $f(x) = \dfrac{\cos(3x)}{x^4}$ and $g(x) = \dfrac{1}{x^5}$ for $6 < x < 10.2$.

a. How many times do the two curves intersect in this interval? 4

b. Find the zeros of $f(x)$, accurate to five decimal places, in this interval.

6.80678
7.85398
8.90118
9.94958

c. Find the x–coordinates where $f(x)$ and $g(x)$ intersect in this interval, accurate to five decimal places.

6.75727
7.89631
8.86349
9.98183

Problem 2. Let $f(x) = \dfrac{\cos(5x^2) - 1}{\sin^4(3x/\pi)}$.

a. Compute the EXACT answer (symbolically) for $\lim_{x \to 0} f(x)$.

$$-\frac{25\pi^4}{162}$$