

Calculus 1000A — Fall 2015
Quiz 4

Date: Dec. 02, 2015
Duration: 25 minutes.

Name: _____
Section: 007

This is a multiple-choice test. Circle the best answer. Correct answers will earn you 5 points each. You can score a maximum of 20 points.

Problem 1. $\lim_{n \rightarrow \infty} \left(\sum_{i=1}^n \frac{2}{n} \ln \left(1 + \frac{4i^2}{n^2} \right) \right) =$

(A) $\int_1^3 \ln(1+x^2) dx.$

(B) $\int_0^2 \ln(x^2) dx.$

(C) $\int_0^2 \ln(1+x^2) dx.$

(D) $\int_1^3 \ln(x^2) dx.$

(E) 0.

Problem 2. $\frac{d}{dx} \int_0^{e^x} \frac{u^2 - 1}{u^2 + 1} du =$

(A) $\frac{e^{2x} - 1}{e^{2x} + 1}.$

(B) $e^x \frac{e^{2x} - 1}{e^{2x} + 1}.$

(C) $\frac{e^{2x} - 1}{e^{2x} + 1} + 1.$

(D) $\frac{e^{2x} - 1}{e^{2x} + 1} - 1.$

(E) 0.

Problem 3. $\int \frac{\ln(\sin x) \cos x}{\sin x} dx =$

(A) $\frac{\cos^2 x - \ln(\sin x)}{\sin^2 x} + C.$

(B) $\ln(\sin x) \cos(x) + C.$

(C) $\frac{\ln(\sin x) \cos x}{\sin x} + C.$

(D) $\frac{(\ln(\sin x))^2}{2} + C.$

(E) None of the above.

Problem 4. Using symmetry, $\int_{-3}^3 \frac{1}{1+x^4} - \sin^3(x) dx$ can be re-written as

(A) $2 \int_0^3 \frac{1}{1+x^4} dx.$

(B) 0.

(C) $-2 \int_0^3 \sin^3(x) dx.$

(D) $2 \int_0^3 \frac{1}{1+x^4} - \sin^3(x) dx.$

(E) $\int_0^3 \frac{1}{1+x^4} - \sin^3(x) dx.$