Dr. Ronald Koh

CSD2201/2200 Week 5 Homework

Due: 15th October 2023, 2359 HRS

For each question, key in the correct option into the homework into the "Week 5 Homework" option in the "25 September to 1 October" section in our combined CSD2201 and CSD2200 meta course page on Moodle.

Question 1

According to the LIATE prioritization tool, if we were to evaluate $\int x^2 \ln x \, dx$, what do we choose as u? (a) 1 (b) x (c) x^2

- (d) $\ln x$
- (e) None of the above

Question 2

For the integral $\int \sin^5 x \cos^4 x \, dx$, an appropriate substitution would be u =

- (a) $\sin^2 x$. (b) $\cos^2 x$. (c) $\sin x$.
- (e) None of the above

Question 3

For the integral $\int \tan^4 x \sec^6 x \, dx$, an appropriate substitution would be u = (a) $\tan^2 x$. (b) $\sec^2 x$ (c) $\tan x$. (d) $\sec x$. (e) None of the above

Question 4

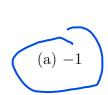
Find C in the partial fraction decomposition:

 $\frac{3x-15}{x^4+14x^3+30x^2} = \frac{A}{x} + \frac{B}{x^2} + \frac{Cx+D}{x^2+14x+30}.$ (a) $-\frac{1}{2}$ (b) $-\frac{25}{6}$ (c) $-\frac{1}{3}$ (d) $\frac{1}{3}$ (e) None of the above

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Question 5

Find B in the partial fraction decomposition:



- $\frac{3x+1}{x^3-x^2} = \frac{A}{x} + \frac{B}{x^2} + \frac{C}{x-1}.$
- (b) 1

- (c) 4 (d) -4 (e) None of the above

Question 6

Say we know that for a function f, $|f''(x)| \leq 2$ on [0,2]. How large do we need to take n so that the approximation M_n to the integral $\int_0^2 f(x) dx$ is accurate to within 0.0001?

- (a) 73

- (b) 67 (c) 41 (d) 29 (e) None of the above

Question 7

Say we know that for a function f, $|f''(x)| \leq 3$ on [-1,2]. How large do we need to take n so that the approximation S_n to the integral $\int_{-1}^{2} f(x) dx$ is accurate to within 0.0001?

- (a) 15
- (b) 14
- (c) 13 (d) 12
- (e) None of the above