

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) $\sin x$. (d) $\cos x$. (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

Question 5

Find B in the partial fraction decomposition:

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

(a) -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