# 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