

CSD2201/2200 Week 7 Homework

Due: 22nd October 2023, 2359 HRS

For each question, key in the correct option into the homework into the "Week 7 Homework" option in the "9 October to 15 October" section in our combined CSD2201 and CSD2200 meta course page on Moodle.

Question 1

Evaluate $\int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} \sin^2 x \cos^5 x \, dx.$

(b)
$$\frac{7}{30\sqrt{2}}$$

(a) 0 (b)
$$\frac{7}{30\sqrt{2}}$$
 (c) $\frac{9}{140\sqrt{2}}$



(e) None of the above

Question 2

Evaluate $\int_{1}^{\sqrt{2}} \frac{x}{x^4 - 2x^2 + 2} \, dx.$

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{4}$

(d) $\frac{\pi}{16}$

(e) None of the above

Question 3

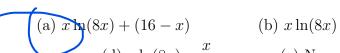
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7

Pind an antiderivative of $f(x) = \ln(8x)$.

Question 3

Pind $f(x) = \ln(8x)$.



(d) $x \ln(8x) - \frac{x}{8}$

(b)
$$x \ln(8x)$$

(c) $x \ln x - x$

(e) None of the above



Question 4

Evaluate $\int_0^{\frac{1}{2}} e^{\sqrt{2x}} dx$.

- (b) 4
- (c) 9
- (d) 16
- (e) None of the above

Question 5

Find CD in the following partial fraction decomposition:

$$\frac{15}{x^4+3x^3+x^2+3x}=\frac{A}{x}+\frac{B}{x+3}+\frac{Cx+D}{x^2+1}.$$
 (a) $-\frac{9}{2}$ (b) $-\frac{1}{2}$ (c) 5 (d) $-\frac{27}{4}$ (e) None of the above

Question 6

Say we know that for a function f, $|f''(x)| \leq 3$ on [-2,1]. How large do we need to take n so that the approximation T_n to the integral $\int_{-2}^1 f(x) dx$ is accurate to within 0.0001?(b) 184 (c) 179 (d) 173 (e) None of the above

- (a) 259

Question 7

Say we know that for a function f, $|f^{(4)}(x)| \leq 4$ on [-3,2]. How large do we need to take n so that the approximation S_n to the integral $\int_{-3}^{2} f(x) dx$ is accurate to within 10^{-5} ?

- (a) 11
- (b) 12
- (c) 51
- (e) None of the above