

Math 232 Calculus 2 Fall 17 Sample midterm 2

- (1) Find $\int \cos^3 x dx$.
- (2) Find $\int \cos 4x \sin 3x dx$.
- (3) Find $\int \frac{x}{\sqrt{x^2 + 4}} dx$.
- (4) Find $\int \frac{3x^2 + 3x + 2}{(x - 1)(x + 1)^2} dx$.
- (5) Find $\int_0^1 x^2 \ln x dx$.
- (6) Find $\int_0^\infty \frac{1}{1 + 9x^2} dx$.
- (7) Find the degree three Taylor polynomial centered at $x = 1$ for the function $f(x) = \sqrt{x^2 + 3}$.
- (8) Does the series $\sum_{n=2}^{\infty} \frac{(-1)^n}{e^n}$ converge or diverge? If it converges, find the exact value.
- (9) Does the series $\sum_{n=1}^{\infty} \frac{2}{n^2 + 2n}$ converge or diverge? If it converges, find the exact value.
- (10) Does the series $\sum_{n=1}^{\infty} \frac{n^2}{2^n}$ converge or diverge?
- (11) Does the series $\sum_{n=1}^{\infty} \cos\left(\frac{1}{n}\right)$ converge or diverge?

(12) Does the series $\sum_{n=1}^{\infty} \frac{(\ln n)^2}{n^4}$ converge or diverge?

(13) Does the series $\sum_{n=1}^{\infty} \frac{2^n}{n!}$ converge or diverge?

(14) For which values of x does the series $\sum_{n=1}^{\infty} \frac{x^n}{n^2}$ converge?