

Calculus II
Review for test 3
Luczak

Evaluate the following integrals by the method of your choice. For definite integrals give exact answers only, NO DECIMAL APPROXIMATIONS.

1. $\int \frac{9}{(x+2)^2(1-x)} dx$

2. Find the area under the curve $y = e^{-x}$ above the x axis on the interval $[1, \infty)$.

3. $\int_{-\infty}^0 \frac{e^x}{1+e^{2x}} dx$

4. $\int_4^{\infty} \frac{1}{\sqrt{x}} dx$

5. $\int_{-1}^1 \frac{1}{x^2} dx$

Evaluate the following limits.

6. $\lim_{x \rightarrow \infty} xe^{-3x} =$

7. $\lim_{x \rightarrow 0} \frac{5x}{\tan x} =$

8. $\lim_{x \rightarrow \infty} \left(1 + \frac{3}{x}\right)^{2x} =$

9. $\lim_{x \rightarrow \frac{\pi}{2}} \left(\frac{\sin 2x}{4x^2 - \pi^2} \right) =$

10. Find the fourth term of the sequence $\left\{ \frac{(-1)^n 3^{n+1}}{2n-1} \right\}$.

11. Find the sum: $\sum_{n=0}^{\infty} 3 \left(-\frac{1}{2} \right)^n$

12. Find the sum: $\sum_{n=1}^{\infty} \frac{3}{4n^2 - 1}$

13. Find the sum: $\sum_{n=0}^{\infty} \left(\frac{e}{\pi} \right)^n$