Calculus II
Review for test 2
Luczak

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

1. $\int_1^e \frac{1-\ln x}{x}\,dx$

2. $\int_0^{\frac{\pi}{2}} \cos^2(-3\theta)\,d\theta$

3. $\int_0^{\frac{1}{2}} \tan^{-1}(2x)\,dx$

4. $\int \frac{x^2+2x+2}{x+1}\,dx$

5. $\int_0^1 e^x \tan e^x\,dx$

6. $\int x^2 \cos(3x)\,dx$

7. $\int \tan x \sec^3 x\,dx$

8. $\int \frac{\ln x}{x^2}\,dx$

9. $\int \frac{\tan^3 x}{\sec^2 x}\,dx$

10. $\int \frac{1}{\left(x^2-4\right)^{\frac{3}{2}}}\,dx$

11. Find the derivative of the following functions:

a) $y = \sinh^2 8x$ b) $y = \ln(\cosh 6x)$

12. Integrate the following:

a) $\int \frac{\sinh x}{1+\cosh x}\,dx$ b) $\int \coth^2(x)\operatorname{csch}^2(x)\,dx$

13. Evaluate, leave answer simplified as much as possible but in exact form (NO DECIMALS):

$$\int_{\ln 2}^{\ln 7} \tanh x\,dx$$