MTH 1126 - Practice Test #3

FALL 2015

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Instructions. Show CLEARLY how you arrive at your answers.

1. Compute $\int \frac{\ln\left(\sqrt{x}\right)}{\sqrt{x}}\,dx$ using u-substitution:

2. Compute $\int \frac{\ln\left(\sqrt{x}\right)}{\sqrt{x}}\,dx$ using Integration by Parts:

3. Compute: $\int x\ln\left(x\right)\,dx =$

4. $\int \sin^3\left(x\right)\cos^4\left(x\right)\,dx =$

5. $\int xe^{2x}dx$

6. $\int x^2e^{3x}dx =$

7. $\int e^x\sin\left(x\right)dx$

8. $\int \cos^3\left(x\right)\sin^4\left(x\right)dx$

9. $\int \sin^3\left(x\right)dx$

10. $\int \sin^2\left(x\right)\cos^2\left(x\right)dx$

11. $\int \tan^3\left(x\right)\sec^3\left(x\right)dx$

12. $\int \tan^3\left(x\right)\sec^4\left(x\right)dx$

13. $\int \frac{1}{\sqrt{9+4x^2}}dx$

14. $\int \frac{\sqrt{x^2-9}}{x}dx$

15. $\int \frac{11x+2}{2x^2-5x-3}dx$

16. $\int \frac{4x^2+x+1}{(x^2+1)(x-1)}dx =$

17. $\lim_{x\to 0}\frac{\cos(x)+2x-1}{3x} =$

18. $\lim_{x\to\frac{\pi}{2}^-} \frac{4\tan(x)}{1+\sec(x)} =$

19. $\lim_{x\to 0} \frac{e^x+e^{-x}}{x^2} =$

20. $\lim_{x\to 0^+} x^2 \ln(x) =$

21. $\lim_{x\to 0^+} (1+3x)^{\frac{1}{2x}} =$

22. $\lim_{x\to 0^+} \left(\frac{1}{e^x-1} - \frac{1}{x}\right) =$