

Integration Practice**Math 236 Summer 2002**

You do not have to hand in these problems. However, I give you the following three motivations to work on them: (1) your integration skills will improve; (2) I will put at least two of these problems on the next exam; and (3) the first person to solve *all* of these problems correctly and give them to me will win a prize!

1. $\int e^x \tan e^x dx$

10. $\int \frac{x+1}{x^4+3x^2} dx$

19. $\int \frac{\sin^3 x}{\sqrt{\cos x}} dx$

2. $\int \sec^6 x \tan^2 x dx$

11. $\int \frac{x^3}{e^{x^2}} dx$

20. $\int x \sqrt{(1-x)(x-5)} dx$

3. $\int 2^x e^x dx$

12. $\int \frac{\operatorname{sech} x}{\sqrt{e^x}} dx$

21. $\int \cos^4 x dx$

4. $\int \cot^3 x \csc x dx$

13. $\int x(2x+5)^{\frac{7}{2}} dx$

22. $\int \cos(\ln x) dx$

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

14. $\int x^2 \tan^{-1} x dx$

23. $\int \ln \left(\frac{2x+1}{1-x} \right) dx$

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

15. $\int \sec^3 x dx$

24. $\int x \sin^{-1} x dx$

7. $\int \frac{1+\tanh x}{\cosh^2 x} dx$

16. $\int \frac{7x^2+6x+5}{x^3+x^2+x-3} dx$

25. $\int \frac{1}{e^x \sqrt{4+e^{2x}}} dx$

8. $\int (\ln x)^3 dx$

17. $\int \frac{1}{(9-4x^2)^{\frac{3}{2}}} dx$

26. $\int \cot^5 x dx$

9. $\int \sin^5 x \cos^9 x dx$

18. $\int \frac{\sin^{-1} x}{\sqrt{1-x^2}} dx$

27. $\int \frac{2x^3+x^2+2}{x^3+1} dx$