

### Basic Integration Quiz Sheet

The following pages of integrals all can be evaluated by either simplification or  $u$ -substitution. The first 2 pages contain indefinite integrals. The last page contains definite integrals. By the end of the third week of class you should be able to complete the first 2 pages in 15-20 minutes and the last page in 15-20 minutes. So you should be able to complete these types of integral problems in about 1 minute or less each.

Note that our current methods are limited to these types of problems, there are lots of integrals we still are unable to do. (This means, on the first exam I can only ask you to evaluate integrals that can be completed using simplification or  $u$ -substitution.)

Evaluate all the following:

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

2.  $\int dx$

3.  $\int \sin(\tan(x)) \sec^2(x) \, dx$

4.  $\int x^7(1+x^8)^{31} \, dx$

5.  $\int \tan(x) + \frac{\sin(x)}{\cos^2(x)} + 13xe^{x^2} \, dx$

6.  $\int (5x^4 - 6x)\sqrt{x^5 - 3x^2 + 1} \, dx$

$$7. \int x(1+x)^5 dx$$

$$8. \int \frac{\sqrt{3x^3 + 4x^2} - 11x}{\sqrt{x}} dx$$

$$9. \int \frac{x^5}{\sqrt{1+x^3}} dx$$

$$10. \int \cos(x) \sin(x) dx$$

$$11. \int \sin(13x) dx$$

$$12. \int e^{7x} dx$$

$$13. \int \cos\left(\frac{1}{4}x\right) dx$$

$$14. \int \sin(-5x) dx$$

$$15. \int e^{101x} dx$$

$$16. \int \cos(2x) dx$$

$$17. \int_0^{(\frac{\pi}{2})^{1/3}} x^2 \sin(x^3) dx$$

$$18. \int_0^{\frac{\pi}{2}} e^{-3 \cos(x)} \sin(x) dx$$

$$19. \int_{-10}^{-3} e^{\frac{1}{10}x} dx$$

$$20. \int_{\pi/3}^{\pi/4} \sin(-\frac{7}{8}x) dx$$

$$21. \int_2^3 \frac{x}{\sqrt{4+x^2}} dx$$

$$22. \int_1^5 \frac{x^3 - 2x^2 + x^{5/2}}{x^{1/3}} dx$$

$$23. \int_2^{2e} \frac{3-x}{2x} dx$$

$$24. \int_1^e \frac{(\ln(x))^3}{x} dx$$