

Lab 4: Choosing Integration Methods

In this lab you will do several problems that will help you practice with our various integration techniques, including deciding which to use in a given situation. If you use the table, reference the line number and list the values of any constants. If you use another method, tell me which one you're using. Also, you may not have to use any specialized method if you apply algebraic simplification techniques to your integrand first.

Evaluate each integral neatly in pencil on a **separate** piece of paper and staple your pages. Clearly lay out your work using proper notation and circle/highlight/box your final answer. **Problems with just an answer and no work will not receive credit.** You are encouraged to work groups of 2 to 4 people. If you do work with more than one person, you only need to hand in one lab write-up per group; make sure you put everyone's name on it. This lab is worth 40 points, with each problem worth 4 points. This is due **Monday, August 11.**

Some advice: If you are having trouble determining which integration technique to use in a given situation, read through the strategy in section 7.5.

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

2. $\int x\sqrt{4-x^2} dx$

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

4. $\int \frac{\sec^2 x \tan^2 x}{\sqrt{9-\tan^2 x}} dx$

5. $\int x(x-10)^{10} dx$

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

7. $\int \frac{x^4}{\sqrt{x^{10}-2}} dx$

8. $\int \frac{1}{x^2+4x+5} dx$

9. $\int \left(\frac{x}{3} + \frac{3}{x}\right)^2 dx$

10. $\int e^{5x} \cos(2x) dx$