

60 points

This lab is simply a collection of basic integrals. There is nothing special about any of them. What might make this lab a little difficult is your “toolbox” for finding anti-derivatives is getting bigger, and choosing the correct technique may be a challenge. Feel free to work together, **but everyone must have their own lab checked off, or a preliminary check, by the Friday of week 8, after that it will be reduced by 25%**. I need to see your work and not a list of answers, as I already know the answers. I want to see that you know how to do these by using correct notation, appropriate use of the equal signs, **at least one or two intermediate steps**, and identifying necessary substitutions “off to the side”. **Do not use the tables to derive the results.**

Find the following general anti-derivatives.

1. $\int 2e^{4x} dx$

2. $\int 2xe^{4x} dx$

3. $\int \frac{x}{\sqrt{25-x^2}} dx$

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

5. $\int (4x - 5)^5 dx$

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

7. $\int \frac{3x - 1}{x^2 + 2x - 15} dx$

8. $\int \frac{4x + 4}{x^2 + 2x - 15} dx$

9. $\int \frac{12}{x} dx$

10. $\int \frac{12}{x^2} dx$