

# Integration Practice Problems for Differential Equations

In these practice problems, we will focus on *Partial Fractions* and also *Integration by Parts using a Table*. If you need to get an overview of these techniques, you might go to the Khan Academy website (easy to find via Google), or use the online Calculus textbook that we use at Whitman (p. 174-186)- It's the first link on our class website.

Try out the integrals below - You can check your work on Wolfram Alpha if you'd like.

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

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

3.  $\int \frac{1}{y^2+4} dy$

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

5.  $\int \frac{t-1}{t+4} dt$

6.  $\int t^2 \cos(3t) dt$

7.  $\int \ln(x) dx$

8.  $\int e^{2x} \sin(3x) dx.$