

## Partial Fractions and Inverse Laplace Transform

In order to use the Laplace transform we need to be able to invert it and find  $f(t)$  when we're given  $F(s)$ . Often this can be done by using the Laplace transform table. So for example, if  $F(s) = 1/(s - 5)$  then  $f(t) = e^{5t}$ .

More often we have to do some algebra to get  $F(s)$  into a form suitable for the direct use of the table. Our main technique for doing this is the partial fractions decomposition. You probably saw this before in calculus as a method for computing integrals.

First we will learn how to do partial fractions in a straightforward algebraic way using the *method of undetermined coefficients*. Next we will learn the Heaviside coverup method which makes some of the algebra easier.

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18.03SC Differential Equations  
Fall 2011

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