**Linear First Order Equations**

A general first order linear equation would look like this:



This equation can be solved with an integrating factor. Define:



And multiply both sides by this. So we have:



Then we can make the following manipulations:



and so we have:



**Example**

Let’s solve:



So we have:



We could put this in terms of standard functions, like the erf(x):



Now let’s impose the initial condition.



So our solution is:

