Physics 604 Homework #3 Fall '20
Dr. Drake

Note that the Arfken problems correspond to the 7th Edition with the corresponding 6th Edition problems in the parentheses.

1. Arfken 11.5.1 (6.5.1), 11.6.10 (6.5.10), 11.6.11 (6.5.11)

   Hint: for 5.11 (b), let $z = re^{i\theta}$ and deform the t integral so that as θ changes the t integral always converges – this is the analytic continuation of the integral representation. Show that if you now complete the integral, you obtain $f_2 = 1/z$ as long as z is not zero.

2. Evaluate the following integral using two different techniques.

   $$\int_C \frac{dz}{(z^2-1)^{1/2}},$$

   where the C is a closed contour which encloses both singularities. A branch cut along the real axis extends from -1 to 1.