King Fahd University of Petroleum & Minerals
Department of Mathematics and Statistics

Semester II, 2012/2013 (122)
Math 513.02, Dr. Rajai S. Alassar
Homework Assignment No. 2

1. Find the Fourier transform of $f(t) = e^{-at^2}$; $a > 0$.
2. Find the Fourier transform of $f(t) = \cos(\omega_o t) H(t)$.
3. Use convolution to the find the inverse Fourier transform of $F(\omega) = \dfrac{1}{(1+i\omega)(2+i\omega)}$.
   Verify your answer by partial fractions.
4. Find the inverse Fourier transform of $F(\omega) = \dfrac{6e^{iw}\sin(2\omega)}{9+\omega^2}$.
5. Solve the differential equation $y''+6y'+5y = \delta(t-3)$.