HOMEWORK #9 (Fourier Transform)

Due on May 24

1) Find the Fourier transform of $f(x) = 5\left[H(x-1) - H(x-3)\right]$

2) Find the Fourier transform of $f(x) = xe^{-a|x|} \qquad a > 0$

3) Find the Fourier transform of $f(t) = 3e^{-4|t|}\cos(2t)$

4) Solve $\frac{d^2y(t)}{dt^2} + 9y(t) = \cos(\omega_0 t)$ using fourier transform and discuss your result if $\omega_0 = 3$