Diff. Eq. Spring 19 Quiz 4. Name _____ Time_____

1. Verify that the three functions $y_1 = x$; $y_2 = x^{-2}$; $y_3 = x^{-2}\ln x$ form a fundamental set of solutions, and write the general solution.
(Note that the diff. eq. is $x^3y''' + 6x^2y'' + 4xy' - 4y = 0$, on $(0, \infty)$, but all you need to do is find the Wronskian, simplify all the way to a single fraction, and write the general solution.)

2. Consider the differential equation $y''' + y' = 0$. It has solution $c_1 + c_2\cos x + c_3\sin x$.
Given the initial values: $y(\pi) = 0$; $y'(\pi) = 7$; $y''(\pi) = -3$, find the specific solution.