Quiz 1 Form **A**
Sept 1, 2017

1.) Determine the order of the given differential equations and also state whether the equation is linear or nonlinear:

[3] 1a.) $t + yy' = 1$ is a *first* order *nonlinear* differential equation.

[3] 1b.) $ty + y' = 1$ is a *first* order *linear* differential equation.

[14] 2.) Solve and state where the solution is defined: $t^4y' + 4t^3y = \frac{1}{t}$

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$(t^4y)' = \frac{1}{t}$

$\int (t^4y)'dt = \int \frac{1}{t}dt$

$t^4y = ln|t| + C$

$y = t^{-4}(ln|t| + c)$

Solution: $y = t^{-4}(ln|t| + c)$ Domain: $t \neq 0$ or equivalently $(-\infty, 0) \cup (0, \infty)$