No books, notes or graphing calcuators. Please turn off your cell phones. Show ALL your work.

1. Consider a parametric curve on the plane given by the equations $(x(t), y(t)) = (17 + t^2, t^2 + t^3)$.

(a)[4pts] Find $\frac{dy}{dx}$, $\frac{d^2y}{dx^2}$ as functions of t.

(b)[3pts] Find all values of t for which the curve is concave upward.

(c)[3pts] Set up, but do not evaluate, the integral to compute the length of the arc of the curve between $t = 0$, and $t = 1$.