

Name: _____

Math 2030, Winter 2016, Quiz 11

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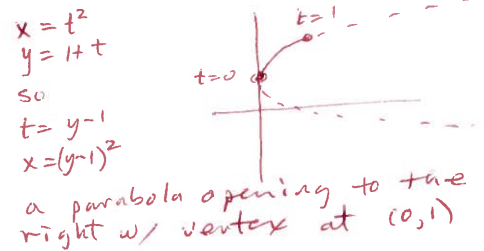
Let C be the curve parameterized by $\mathbf{r}(t) = (x(t), y(t)) = (t^2, 1+t)$ for t in $[0, 1]$.

Find

1. $dx = x'(t)dt$

2. $dy = y'(t)dt$

3. the value of the line integral $\int_C y dx - x dy$.



1. $dx = 2t dt$

2. $dy = dt$

3. $\int_C y dx - x dy = \int_0^1 (1+t)(2t) - t^2 dt$

$$= \int_0^1 2t + 2t^2 - t^2 dt$$

$$= \int_0^1 2t + t^2 dt$$

$$= t^2 + \frac{1}{3}t^3 \Big|_0^1$$

$$= 1 + \frac{1}{3} - (0 + 0)$$

$$\boxed{= \frac{4}{3}}$$