Quiz 4

1. In a short quiz which has 5 points, the following question was asked

$$\int_{C} (\sqrt{1 + x} + 2xy)dx + x^2dy,$$

where \( C \) : \( \vec{r}(t) = (t^2, t^3), t : 0 \to 1 \). A student gave out the solution as following. Please assign a score for this student and give your reason.

Solution.

\[
\text{Integral} = \iint_{R} (2x^2 - 2x) dA = \iint_{R} (2x - 2x) dA = 0.
\]

2. Find the integral

$$\oint_{C} y^4dx + 2xy^3dy$$

where \( C \) is the ellipse \( x^2 + 2y^2 = 2 \) with clockwise orientation. (Hint: Use symmetry for the double integral that you have.)