Name:_____

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One the the following vector fields is conservative:

$$(3x^2 + y, x + y) \qquad \text{and} \qquad (3y^2 + x, x + y)$$

1. Determine which one it is and call it **F**.

2. Find a potential function for it.

3. If C is a curve starting at $(0, 2)$ and ending at $(2, 2)$, what is the value of $\int_C \mathbf{F} \cdot d\mathbf{r}$?