Full name: _____   **GT ID:**_____   **Sec:**____

Quiz 10 Version C

You have 15 minutes to take the quiz. No phones, notes, or use aids of any kind is permitted.

1. (4 points) [**Conservative Vector Fields**] *True or False.*

   (a) The vector field $\mathbf{F} = \left\langle 3x + e^{z^2 y}, y + z, \arctan x - z \right\rangle$ has zero divergence (i.e., div $\mathbf{F} = 0$).

   [A]

        ○ **TRUE**   ○ **FALSE**

   (b) Find a potential function for $\mathbf{F} = \left\langle \frac{-y}{x^2+y^2}, \frac{x}{x^2+y^2} \right\rangle$ or show why $\mathbf{F}$ is not conservative.   [AN]

2. (6 points) [**FToLI**]
   Evaluate the line integral $\int_C F \cdot T \, ds$ using FToLI.   [AJN]

$$\mathbf{F} = \left\langle 2xy, x^2 + \ln z, \frac{y}{z} \right\rangle,$$
$$C : \mathbf{r}(t) = (1 - t)\langle 1, 1, 1 \rangle + t\langle 2, 3, e \rangle, \ t \in [0, 1].$$