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Öğrenci No:
Instructor:

GAZİ UNIVERSITY
Faculty of Engineering
Mechanical Engineering Department

ME302 FLUID MECHANICS II
Midterm #1 Homework

13. 04. 2023

(Clearly show coordinate system and important points you used for the solutions)

2. a) (DÖÇ 1) Given the stream function $\Psi = -t \left[(x^2 - 2x) - (y^2 - 2y) \right] / 2$, where t is time.

- (5P) Determine whether the given function is a stream function for an incompressible flow or not.
- (5P) Determine whether the flow is irrotational or not.
- (5P) Find the velocity potential at time $t=1$.

b) (DÖÇ 2) (20P) The venture meter shown in the figure carries water. The density of the manometer fluid is 1250 kg/m^3 . Calculate the average velocity at section A. ($\rho_{\text{water}} = 1000 \text{ kg/m}^3$)

