

Aerodynamics-TD1

Potential flow and Superposition

Exercise 1:

The function potential in a plane of incompressible parfait fluid is

$$\varphi = 0.04x^3 + axy^2 + by^3, \quad a, b = \text{constant}$$

1. Determine a and b .
2. Calculate differential pressure between $(0,0)$ and $(3,4)$. $\rho = 1300 \text{ kg} / \text{m}^3$

Exercise 2 :

Uniform flow with velocity V_∞ oriented in the positive x direction, and moving through source flow located at origin, as sketched in figure below. u and v are x -velocity and y -velocity.

1. Determine v_{\max} and position.
2. Define V is resultant velocity at the position, prove $V = V_\infty$.

