Inflow:

$u = -\frac{3}{2}(y-2)y$ $\quad w = ?$

$v = 0.$ $\quad \psi = ?$

$$\begin{pmatrix} -\frac{\partial \psi}{\partial x} \\ \frac{\partial \psi}{\partial y} \end{pmatrix} = \begin{pmatrix} -v \\ u \end{pmatrix}$$

$$v = -\frac{\partial \psi}{\partial x} = 0$$

$$u = \frac{\partial \psi}{\partial y} = -\frac{3}{2}(y-2)y \Longrightarrow \int_0 -\frac{3}{2}(y-2)y\, dy = \int_0^y \psi'(y)\, dy$$

$$+ C - \frac{3}{2}\left(\frac{y^3}{3} - \frac{2y^2}{2}\right) = \psi(y).$$

$$\partial \psi = \partial y\left(-\frac{3}{2}(y-2)y\right) = \partial y\left(-\frac{3y}{2}+3\right)y = \partial y\left(-\frac{3y^2}{2}+3y\right)$$

$$\boxed{\psi = -\frac{3}{2}\left(\frac{y^3}{3} - y^2\right)}.$$

$$w = -\frac{3}{2}(2y-2) =$$

$$\boxed{w = -3y+3.}$$

$$\omega = \frac{\partial u}{\partial y} - \frac{\partial v}{\partial x}$$

$$\begin{cases} v = -\dfrac{\partial \psi}{\partial x} \\ u = \dfrac{\partial \psi}{\partial y} \end{cases}$$

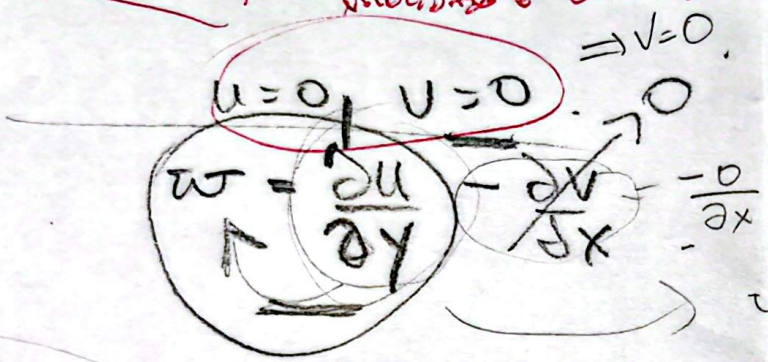
$$\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} = \frac{\partial}{\partial x}\left(\frac{\partial \psi}{\partial y}\right) + \frac{\partial}{\partial y}\left(-\frac{\partial \psi}{\partial x}\right) = 0$$

$$\omega = \frac{\partial}{\partial y}\left(\frac{\partial \psi}{\partial y}\right) - \frac{\partial}{\partial x}\left(-\frac{\partial \psi}{\partial x}\right) = \frac{\partial^2 \psi}{\partial y^2} + \frac{\partial^2 \psi}{\partial x^2} = \nabla^2 \psi$$

$$\nabla^2 \psi = \omega$$ Poisson

Wall:

NA PAREDE A VELOCIDADE É ZERO (CONDIÇÃO DE NÃO DESLIZAMENTO)



$\frac{\partial \psi}{\partial x} = 0 \quad \text{E} \quad \frac{\partial \psi}{\partial y} = 0$

$u = -\frac{3y^2}{2} + 3$

$w = \frac{\partial u}{\partial y} \quad \| \quad w = \frac{\partial^2 \psi}{\partial n^2} \Rightarrow \frac{\partial u}{\partial y} = \frac{\partial^2 \psi}{\partial n^2}$

$\partial u = \frac{-6y^1}{2}$

$\partial u = -3y$

$n = (1,0)$

$(\partial u).(\partial n^2) = (\partial y)(\partial^2 \psi)$

$(\partial u).n(\partial n) = (\partial y).\partial(\partial \psi)$

$(-3y).\frac{\partial n}{\partial x} = \left(\frac{\partial y}{\partial x} + \frac{\partial \psi}{\partial y}\right).$

$n(\partial n) = (1,0).(\nabla n)$

$\nabla n = \left(\frac{\partial n}{\partial x}, \frac{\partial n}{\partial y}\right)$

$n(\partial n) = 1.\frac{\partial n}{\partial x} + 0.\frac{\partial n}{\partial y}$

$n(\partial n) = \frac{\partial n}{\partial x}$

$\rightsquigarrow \quad w = \left(\frac{\partial u}{\partial y} - \frac{\partial n}{\partial x}\right) = 0 - 0 = 0$

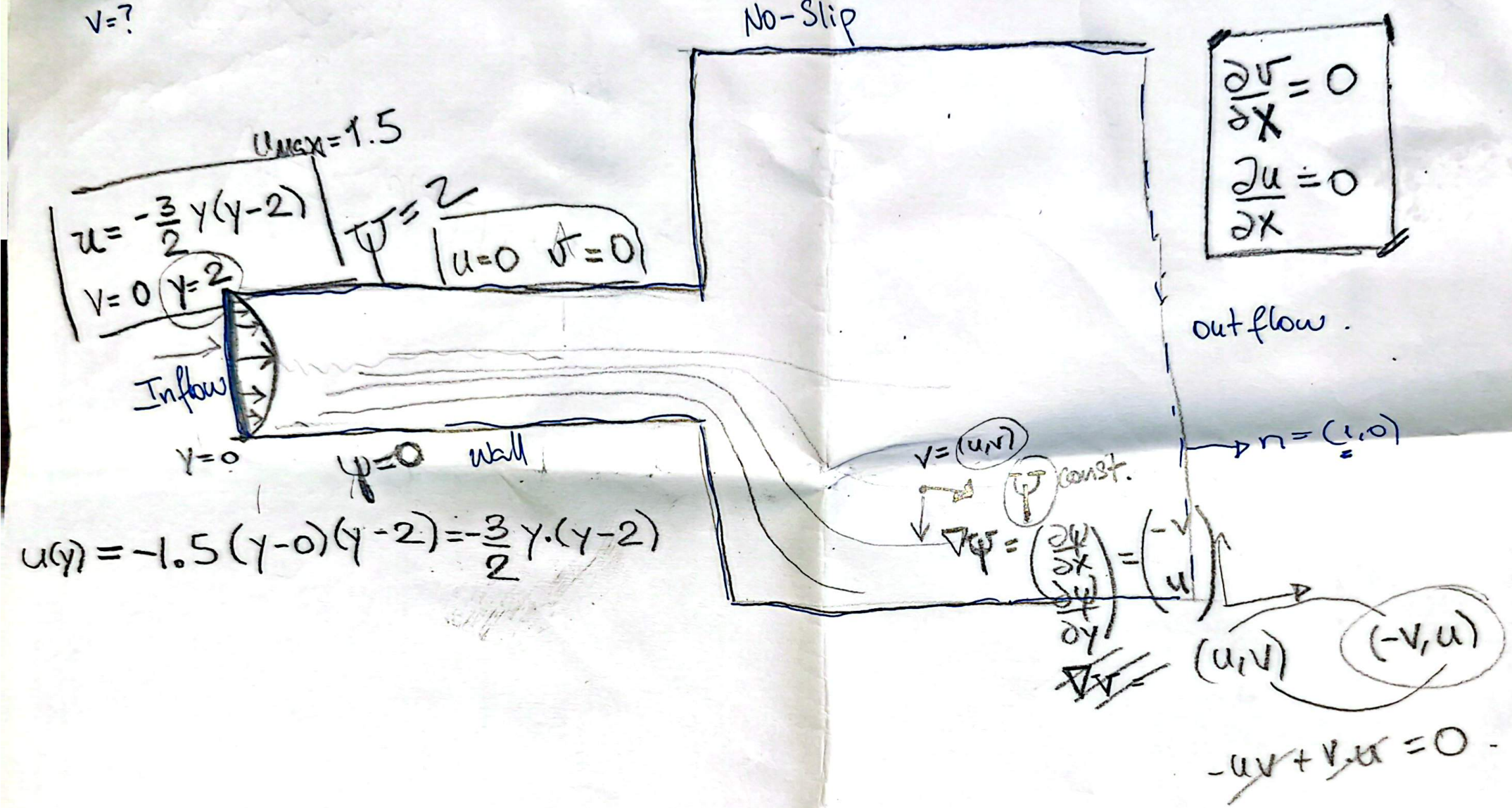
$w = 0$

Outflow

$\frac{\partial \psi}{\partial x} = 0 \qquad \frac{\partial \psi}{\partial x} = 0.$

$u = ?$

$v = ?$



$u(y) = -1.5(y-0)(y-2) = -\frac{3}{2} y \cdot (y-2)$

S T Q Q S S D

ICSB

04/08/25

1ª INSTALAR O CODEBLOCKS NO PC

SE OS ARQUIVOS ESTIVEREM CONECTADOS DEVEM ESTAR TODOS NA MESMA PASTA

SEMPRE USAR AS BIBLIOTECAS PADRÃO
#INCLUDE <STDIO.H>
<STDLIB.H>
<MATH.H>

COMENTÁRIOS

INSTALAR PARAVIEW

18 PRÓXIMA REUNIÃO FATOR CÓDIGO PRO CIC 1:4

06/08/25

ESCOAMENTO EM EXPANSÃO 1:4 VIA FORMULAÇÃO CORRENTE VORTICIDADE

CONVERSEI COM O PROF NA AULA DE AN DO DIA 18/08, AUDIO GRAVOU, PROF CONFIRMOU REUNIÃO PARA QUINTA A TARDE, USAR MESMO A MAIN CONFIRMOU MARISSA NÃO CALCULOU PARAVIEW, EU TENHO QUE FAZER POIS ESTOU ADIANTADO.

DISA CONTANTOS EM QUANTOS
U SALVA VTR

T S T Q Q S S D

PRECISO DE VÁRIOS VTR (U) → FINAL DO CODIGO

U INÍCIO DO CODIGO NÚMERO DE PONTOS

EU VOU MEXER APENAS NO MAIN CONTRATO

25/08

INFLOW:

$$u = -\frac{3}{2}(y-2)y = -\frac{3y^2}{2} + 3y$$

$$v = 0$$

$u = ?$ $\qquad \psi = ?$

(c) $$\begin{pmatrix} \frac{\partial \psi}{\partial x} \\ \frac{\partial \psi}{\partial y} \end{pmatrix} = \begin{pmatrix} -v \\ u \end{pmatrix} \qquad v = -\frac{\partial \psi}{\partial x} = 0$$

$$u = \frac{\partial \psi}{\partial y} = -\frac{3}{2}(y-2)y \Rightarrow \int \left(\frac{-3y^2}{2} + 3y\right) dy$$

$$\int \psi'(y)\,dy \Rightarrow -\frac{3}{2}\left(\frac{y^3}{3} - \frac{2y^2}{2}\right) = \psi(y)$$

$$\Rightarrow \boxed{\psi = -\frac{y^3}{2} + \frac{3y^2}{2}} \qquad \int_0^2 \psi' y\,dy = -\frac{2^3}{2} + 3\frac{2^2}{2} = -4+6 = 2$$

$\psi = 2$ PAREDE SUP = 2

ψ PAREDE INF = 0

(c) $$w = \left(\frac{\partial u}{\partial y} - \frac{\partial v}{\partial x}\right) = \frac{\partial u}{\partial y} - 0 \Rightarrow w = \frac{\partial u}{\partial y}$$

$$\frac{\partial u}{\partial y} = \left(\frac{-3y^2}{2} + 3y\right)' = \boxed{-3y + 3 = w}$$

$$w = \frac{\partial \omega}{\partial y} = \left(\frac{\partial v}{\partial y} - \frac{\partial u}{\partial y}\right) = -(-3y+3) = 3y - 3$$

$u(y) = -\frac{3}{2}y^2 + 3y$	$v(y) = 0$
$\psi(y) = -\frac{1}{2}y^3 + \frac{3}{2}y^2$	$\Psi = 3y - 3$

NO TRECHO LARGO, OS VALORES DE ψ
NÃO MUDA NAS PAREDES

WALL

PARA $0 \leq y < 2$: IMPONHA $u(y), v=0$ $\psi(y)$
PARA $y > 2$: $u=v=0$ E EXTRAPOLE ψ MANTENDO CONTINUIDADES

IMPOR ψ DIRICHLET COMO CONSTANTE AO LONGO DE CADA COMPONENTE DA PAREDE
O SOLVER AJUSTA u, v SOZINHO

PAREDE INF : $\psi = \psi_{inf} = 0$
PAREDE SUP : $\psi = \psi_{sup} = Q = 2$

IMPOR w NAS PAREDES VIA CONDIÇÃO DE THOM USANDO ψ

16x16 → y_f ESTAVA = 8 $N_y = 80$?

TUDO ESTAVA ANTES DO ERRO DESSA

4x4 → y_{up} ESTAVA 8?
E y_{down} 1,5 2.5

STQQSSD

DISKÔ

STQQSSD

VEO ATÉ P=1

NOVO CÓDIGO COM JM, JM E JM1

EXPANSION → PLOT GRÁFICOS FIGURAS.PY

TRABALHO → CIC → NOVO

RODAR Rs, 0.1, 1.0 E 10.0

1K A 10K E 20K, ~~30K A~~ 100K

FACILITAR