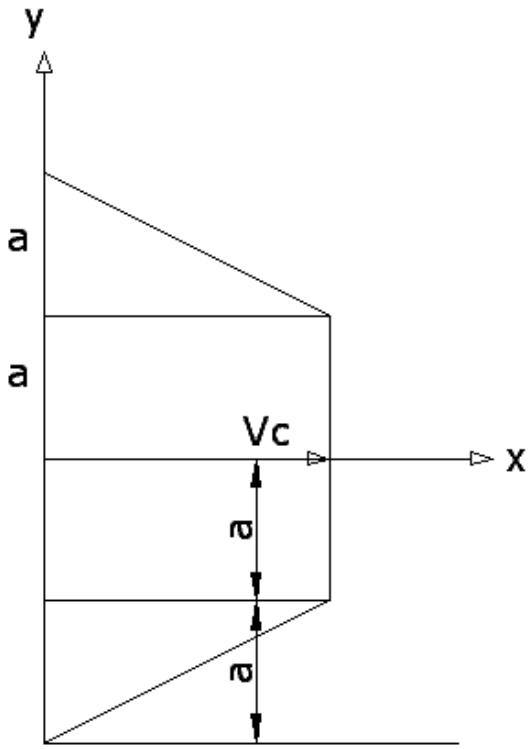
1)



y (0,a) arası $V=V_c$

$V=c_1y+c_2$
$y=a\ V=Vc$
$y=2a\ V=0$

$0=2ac_1+c_2$
$V_c=ac_1+c_2$
$ac_1=-V_c$

$$\mathbf{c_1} = -\frac{\mathbf{V_c}}{\mathbf{a}}$$

$$0 = -2\cdot\frac{V_c}{a}a + c_2$$

$$\mathbf{c_2} = \mathbf{2V_c}$$

y=(a,2a) arası $\mathbf{V} = -\frac{\mathbf{V_c}}{\mathbf{a}}\mathbf{y} + \mathbf{2V_c}$

$$\overline{V} = \frac{1}{A}\int_A V da$$

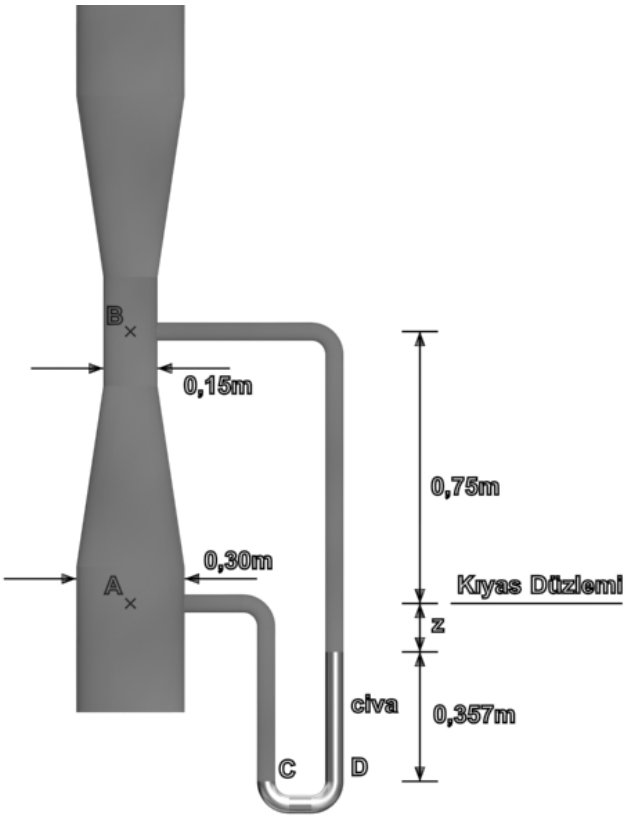
$$\overline{V} = \frac{1}{2a}\left(\int_0^a V_c dy + \int_a^{2a} -\frac{V_c}{a}y + 2v_c dy\right)$$

$$\overline{V} = \frac{1}{2a}\left(V_c y\Big|_0^a + \left(-\frac{V_c}{2a}y^2 + 2v_c y\Big|_a^{2a}\right)\right)$$

$$\overline{V} = \frac{1}{2a}\left(V_c a + -\frac{V_c}{2a}(2a)^2 + 2v_c a - \left(-\frac{V_c}{2a}a^2 + 2v_c a\right)\right)$$

$$\overline{V} = \frac{1}{2a}\left(\frac{3aV_c}{2}\right) = \frac{3}{4}V_c = 2{,}25\frac{m}{s}$$

2)



$V_A \cdot A_A = V_B \cdot A_B$

$A_A = 0{,}09\pi$

$A_B = 0{,}0225\pi$

$V_A \cdot 0{,}09\pi = V_B \cdot 0{,}0225\pi$

$V_A = \frac{V_B}{4}$ **(I)**

A-B arası Bernoulli;

$\frac{V_A^2}{2g} + \frac{P_A}{\gamma} + 0 = \frac{V_B^2}{2g} + \frac{P_B}{\gamma} + 0{,}75$

$\frac{V_B^2}{32g} + \frac{P_A}{\gamma} + 0 = \frac{V_B^2}{2g} + \frac{P_B}{\gamma} + 0{,}75$

$-\frac{15V_B^2}{32g} = P_B - P_A + 0{,}75$ **(II)**

C-D arası basınç eşitliği;

$P_A + (z + 0{,}357) = P_B + (0{,}75 + z) + 0{,}357(13{,}6)$

$P_A = 0{,}393 + P_B + 4{,}8552$ **(III)**

III => II'de yerine konursa;

$$-\frac{15V_B^{\,2}}{32g} = P_B - (0{,}393 + P_B + 4{,}8552) + 0{,}75$$

$$-\frac{15V_B^{\,2}}{32g} = -0{,}393 - 4{,}8552 + 0{,}75$$

$$-\frac{15V_B^{\,2}}{32g} = 4{,}4982$$

$$V_b^{\,2} = 9{,}702491g = 94{,}1383296$$

$$V_b = 9{,}702491\,\frac{m}{s}$$

$$V_B \cdot A_B = V_A \cdot A_A = 9{,}702491 \cdot 0{,}0225\pi$$

$$\mathbf{Q = 0{,}685829\,\frac{m^3}{s}}$$