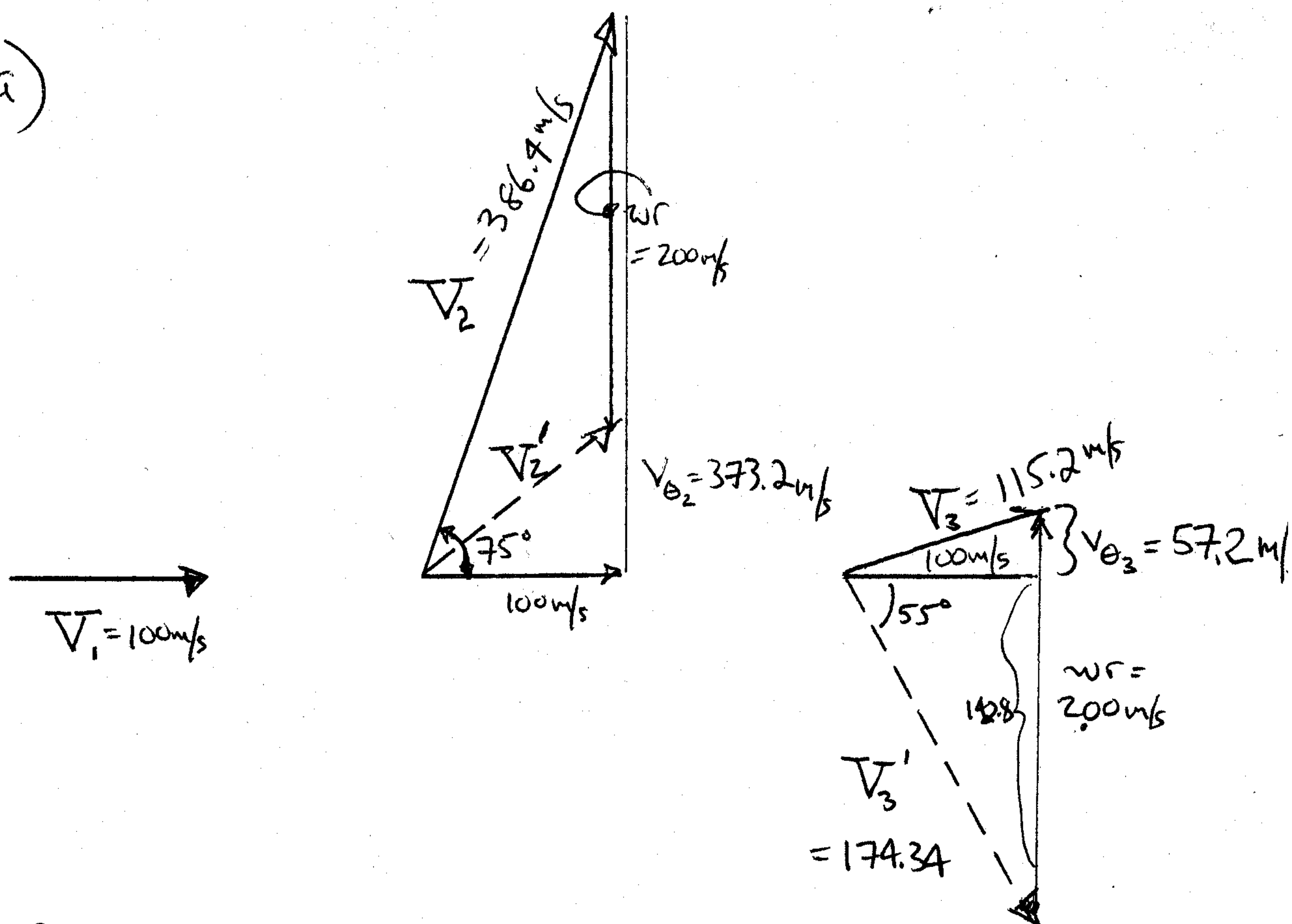


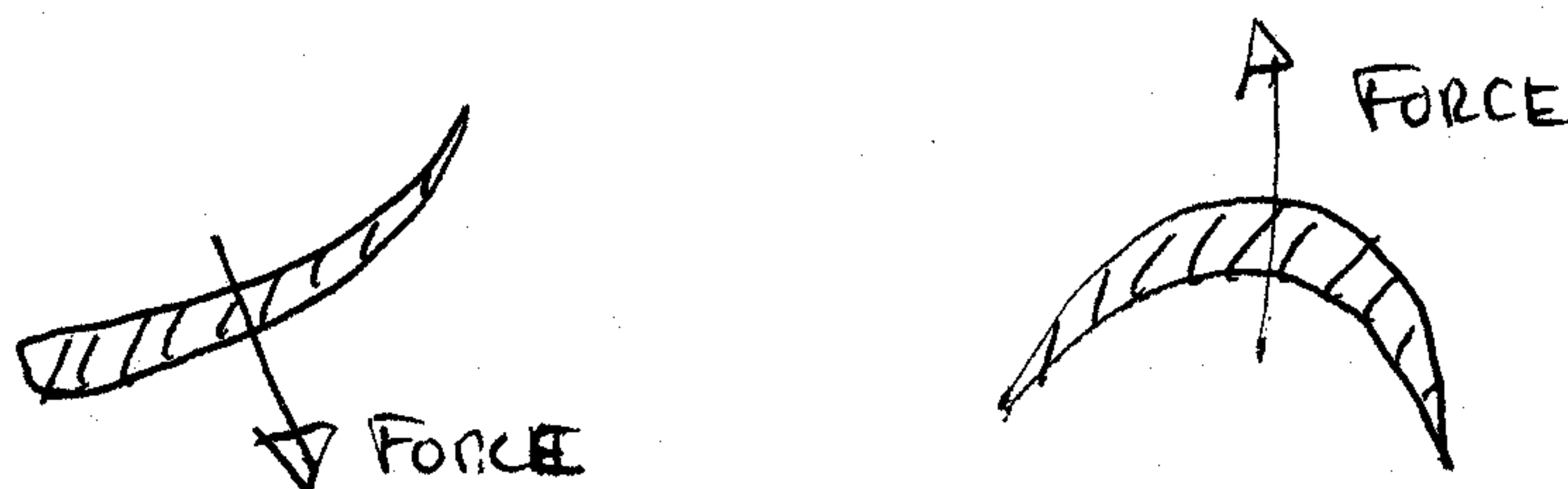
Pq SOLUTIONSWAITZ

a)



b)

THERE IS A TORQUE APPLIED TO BOTH BLADE ROWS (THERE IS A CHANGE IN DIRECTION OF THE FLOW)

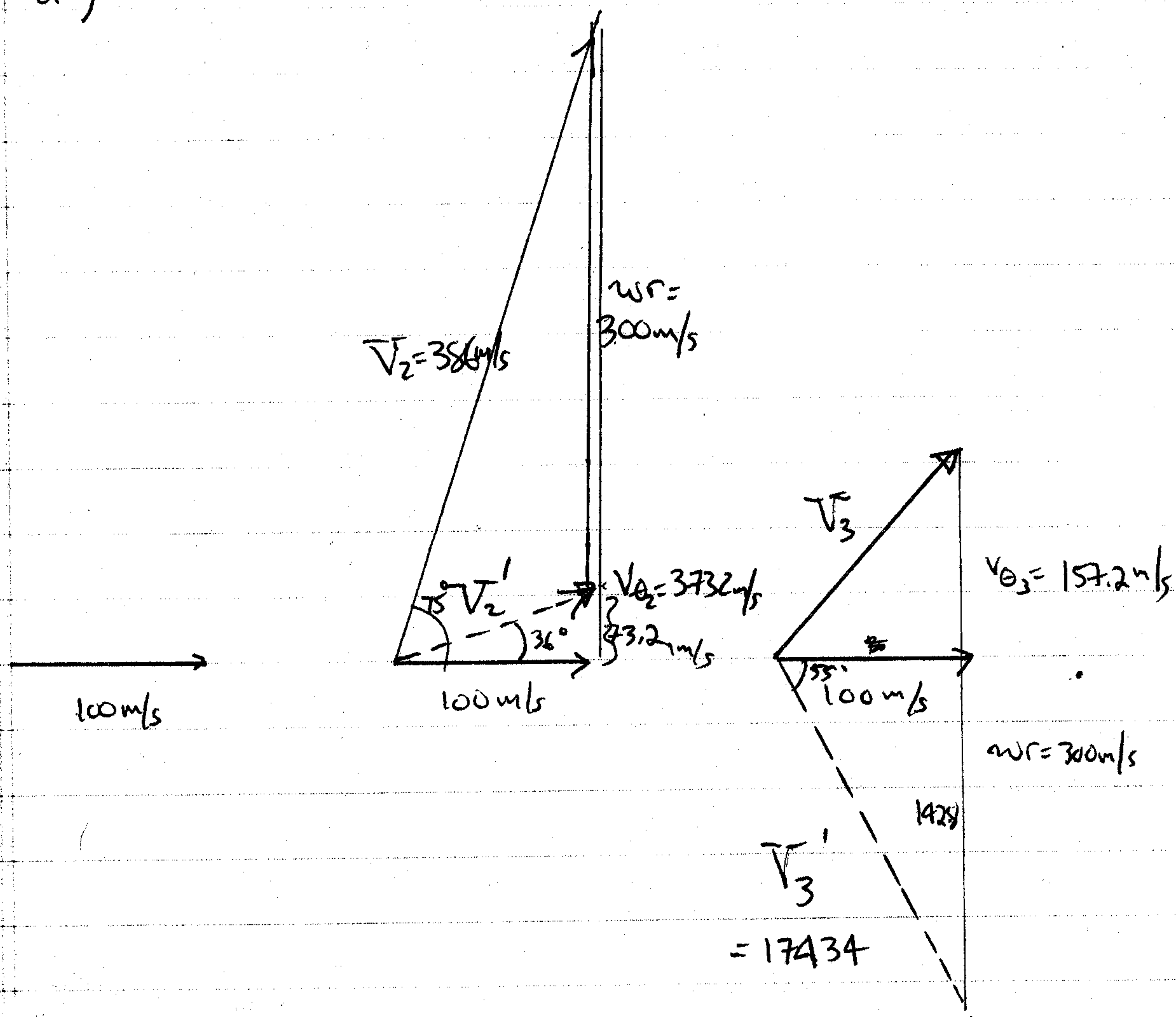


c)

$$P = \dot{m} [\Gamma V_{\theta_3} - \Gamma V_{\theta_2}]$$

THIS IS A TURBINE THE TANGENTIAL COMPONENT OF VELOCITY IS REDUCED ACROSS THE MOVING (in abs. frame) BLADE ROW (WHERE + IS DEFINED IN THE DIRECTION OF ROTOR MOTION)

d)



$$P = -\dot{m} [r V_{\theta 3} - r V_{\theta 2}]$$

$$\frac{\left(\frac{P}{\dot{m}}\right)_{\omega r = 300 \text{ m/s}}}{\left(\frac{P}{\dot{m}}\right)_{\omega r = 200 \text{ m/s}}} = \frac{[157.2 - 373.2]}{[57.2 - 373.2]} = 0.68$$

AT $\omega r = 300 \text{ m/s}$ THERE IS A NEGATIVE ANGLE OF ATTACK ON THE TURBINE (19° in relative frame) MAY CAUSE SEPARATION OF FLOW.

