4.4 The components of a velocity field are given by $u = x + y$, $v = xy^3 + 16$, and $w = 0$. Determine the location of any stagnation points ($V = 0$) in the flow field.

$$V = \sqrt{u^2 + v^2 + w^2} = \sqrt{(x+y)^2 + (xy^3+16)^2} = 0$$

or
$$u = x + y = 0 \quad \text{so that} \quad x = -y$$

and
$$v = xy^3 + 16 = 0 \quad \text{so that} \quad xy^3 = -16$$

Hence, $(-y)y^3 = -16$, or $y = 2$

Therefore, $V = 0$ at $\underline{\underline{x = -2, \; y = 2}}$