$$\therefore (dV)^{\gamma} = 0 \Rightarrow \left(\frac{dP}{dV}\right) \cdot V = -P$$

$$\frac{dP}{dV} = -\frac{P}{V} \quad -(3)$$

Slope of Isothermal curve $(\text{slope})_{iso} = -\frac{P}{V}$ -(4)

For adiabatic Process : $PV^{\gamma} = K$ -(5)

$$P \cdot \frac{dV^{\gamma}}{dV} + \left(\frac{dP}{dV}\right) \cdot V^{\gamma} = 0 \qquad \left\{ \frac{dx^n}{dx} = nx^{n-1} \right.$$

$$P\{\gamma \cdot V^{\gamma-1}\} + \frac{dP}{dV} \cdot V^{\gamma} = 0$$

$$\frac{dP}{dV} \cdot V^{\gamma} = -P\gamma \cdot V^{\gamma-1}$$

$$\frac{dP}{dV} = -P \cdot \gamma \cdot \frac{V^{\gamma-1}}{V^{\gamma}}$$

$$\frac{dP}{dV} = -\gamma \frac{P}{V} \quad -(6)$$

$$(\text{slope})_{adia} = -\gamma \frac{P}{V} \quad -(7)$$

Hw: Eq(7)/(6) ⇒ $(\text{slope})_{adia} : (\text{slope})_{iso} = \gamma : 1$