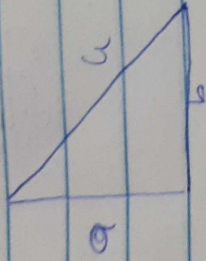


Mbata Emmanuel Chibira
17/ECE 06/053

Mechanical Engineering



recall, Area of $\Delta = \frac{1}{2} b \times a, \frac{1}{2} b a$

$$\frac{\partial A}{\partial b} = \frac{\partial A}{\partial b} + \frac{\partial A}{\partial a} \cdot \frac{\partial a}{\partial b}$$

$$\frac{\partial A}{\partial b} = \frac{a}{2} \cdot \frac{\partial b}{\partial b} + \frac{b}{2} \cdot \frac{\partial a}{\partial b}$$

$$\frac{\partial b}{\partial b} = \frac{1}{0.5} \times b = 200, \quad \frac{\partial a}{\partial b} = \frac{0.5}{100} \cdot a = \frac{a}{200}$$

$$= \frac{1}{0.5} b$$

$$\therefore \frac{\partial A}{\partial b} = \frac{a b}{2} \left(\frac{1}{0.5} \right)$$

Recall, $u = \sqrt{a^2 + b^2}$

$$\frac{\partial u}{\partial a} = \frac{\partial u}{\partial a} \cdot \frac{\partial a}{\partial a} + \frac{\partial u}{\partial b} \cdot \frac{\partial b}{\partial a}$$

$$u = (a^2 + b^2)^{1/2} \quad u = u^{1/2}$$

Let $u = a^2 + b^2$

$$\frac{\partial u}{\partial a} = \frac{\partial u}{\partial a} \times \frac{\partial a}{\partial a} \quad \frac{\partial u}{\partial b} = \frac{\partial u}{\partial b} \times \frac{\partial b}{\partial b}$$

(ABUAD), The Road to Intellectualism, Quality and Excellence

$$= \frac{1}{2} c^{\frac{1}{2}} \times 2a$$

$$\frac{\partial u}{\partial a} = \frac{c}{\sqrt{a^2 + b^2}}$$

$$= \frac{1}{2} c^{\frac{1}{2}} \times 2b$$

$$\frac{\partial u}{\partial b} = \frac{b}{\sqrt{a^2 + b^2}}$$

