$$\gamma_c = a(a^2+b^2)^{-1/2} \cdot \frac{1.5}{100} a + b(a^2+b^2)^{-1/2} \cdot \frac{1.5}{100} \cdot b$$

$$\gamma_c = a^2 \frac{1.5}{100} (a^2+b^2)^{-1/2} + b^2 (a^2+b^2)^{-1/2} \frac{1.5}{100}$$

$$\gamma_c = (a^2+b^2)^{-1/2} \left(a^2 \frac{1.5}{100} + b^2 \frac{1.5}{100}\right)$$

$$\gamma_c = (a^2+b^2)^{-1/2} \times \frac{1.5}{100} \times (a^2+b^2)$$

$$\gamma_c = \frac{1.5}{100} \times (a^2+b^2)^1 \times (a^2+b^2)^{-1/2}$$

$$\gamma_c = \frac{1.5}{100} \times (a^2+b^2)^{1-1/2}$$

$$\gamma_c = \frac{1.5}{100} \times (a^2+b^2)^{1/2}$$

$$\gamma_c = \pm 1.5\% c.$$

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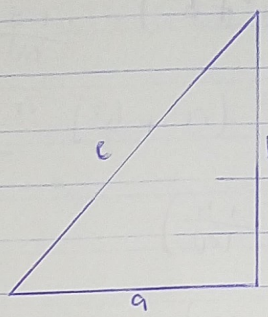
Civil Engineering
17/ENG03/033
ENG 281



$$C^2 = a^2 + b^2$$
$$C = (a^2 + b^2)^{1/2}$$

a) $A = \frac{1}{2}bh = \frac{1}{2}ab$

$\partial A/\partial a = \frac{1}{2}b \qquad \partial A/\partial b = \frac{1}{2}a$

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

$$\partial A = \frac{1}{2}b \cdot \frac{15a}{100} + \frac{1}{2}a \cdot \frac{15}{100}b$$

$$\partial A = \frac{1}{2}ab\left(\frac{1.5}{100} + \frac{1.5}{100}\right)$$
$$= \frac{1}{2}ab\left(\frac{3}{100}\right)$$
$$= A\left(\frac{3}{100}\right)$$
$$\partial A = \pm 3\%A$$

(b) $C^2 = a^2 + b^2$

$$C = \sqrt{a^2 + b^2}$$
$$C = (a^2 + b^2)^{1/2}$$
$$\frac{\partial C}{\partial a} = \frac{1}{2}(a^2 + b^2)^{-1/2} \cdot 2a$$
$$\partial c/\partial a = \frac{1}{2}a(a^2 + b^2)^{-1/2}$$
$$\frac{\partial c}{\partial b} = \frac{1}{2}(a^2 + b^2)^{-1/2} \cdot 2b$$

$$\partial c/\partial b = b(a^2 + b^2)^{-1/2}$$
$$\partial c = \frac{\partial c}{\partial a}\cdot \partial a + \frac{\partial c}{\partial b}\partial b$$