ZADANIE 20.4

DANE:

$f = \frac{2}{3}$

$\eta = 60\%$

$g = 10 \frac{m}{s^2}$

SZUKANE:

$a = ?$

wzór na sprawność równi pochyłej:

$$\eta = \frac{1}{1 + \frac{f}{tg\alpha}}$$

więc z wzoru można sprawdzić ile będzie wynosił kąt nachylenia równi do poziomu

$$\eta = \frac{1}{1 + \frac{f}{tg\alpha}} \quad | \cdot \left(1 + \frac{f}{tg\alpha}\right)$$

$$\eta \cdot \left(1 + \frac{f}{tg\alpha}\right) = 1 \quad | : \eta$$

$$1 + \frac{f}{tg\alpha} = \frac{1}{\eta} \quad | -1$$

$$\frac{f}{tg\alpha} = \frac{1}{\eta} - 1 \quad | \cdot tg\alpha$$

$$f = \left(\frac{1}{\eta} - 1\right) \cdot tg\alpha \quad | : \left(\frac{1}{\eta} - 1\right)$$

$$\frac{f}{\frac{1}{\eta} - 1} = tg\alpha$$

$$tg\alpha = \frac{f}{\left(\frac{1}{\eta} - 1\right)}$$

podstawiam dane do wzoru →

$$tg\alpha = \frac{\frac{2}{3}}{\frac{1}{0{,}6} - 1} = \frac{\frac{2}{3}}{\frac{10}{6} - 1} =$$

$$= \frac{\frac{2}{3}}{\frac{10}{6} - \frac{6}{6}} = \frac{\frac{2}{3}}{\frac{4}{6}} = \frac{\frac{2}{3}}{\frac{2}{3}} = 1$$

$$\alpha = 45^\circ$$