

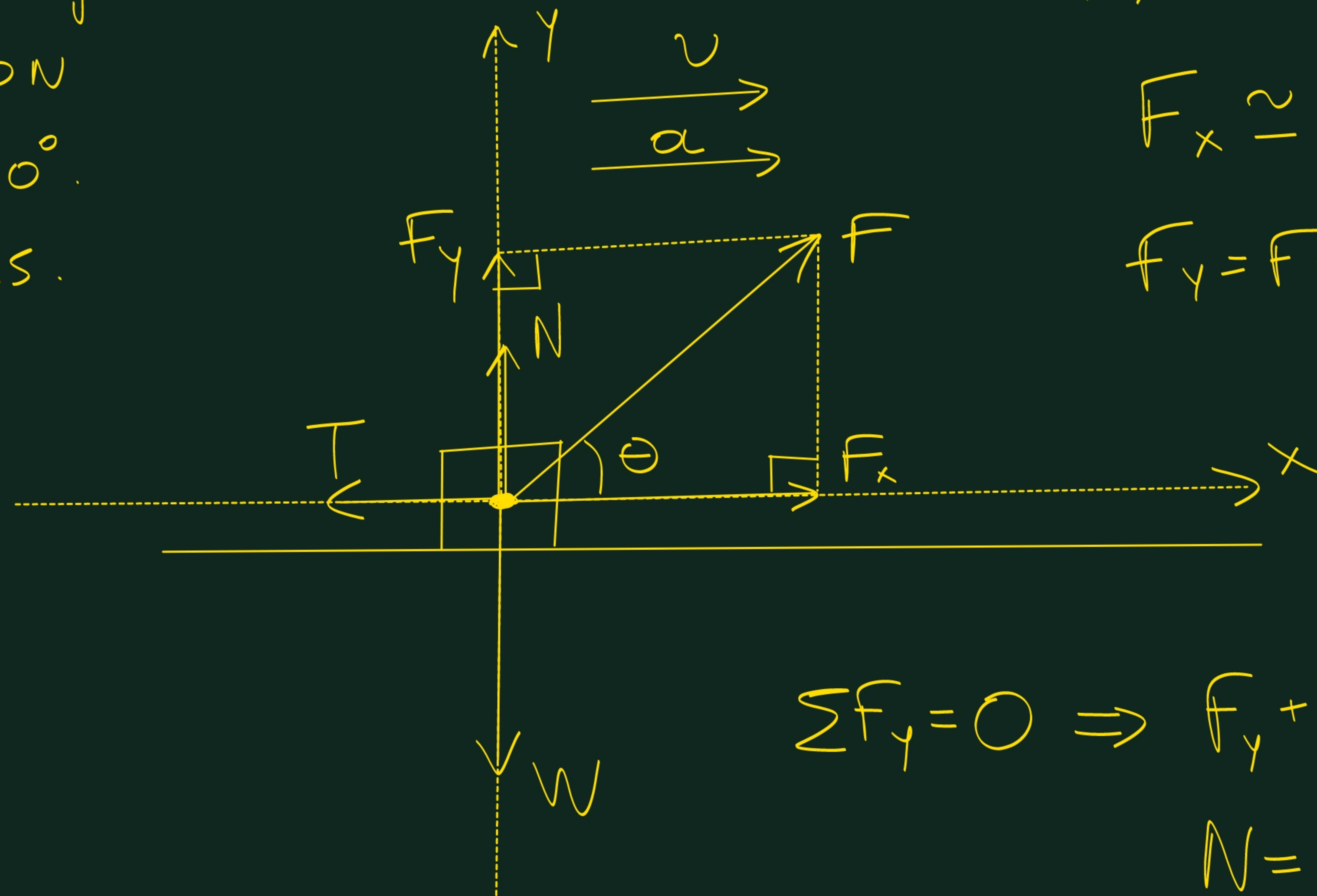
Πρόβλημα 6.128-9.

$$m = 10 \text{ kg.}$$

$$F = 80 \text{ N}$$

$$\theta = 30^\circ.$$

$$\gamma = 0,25.$$



$$a) T = \gamma N$$

$$F_x = F \cdot \cos \theta = 80 \cdot \cos 30^\circ = 80 \cdot \frac{\sqrt{3}}{2} = 40\sqrt{3} \Rightarrow$$

$$F_x \approx 40 \cdot 1,7 \Rightarrow F_x = 68 \text{ N.}$$

$$F_y = F \cdot \sin \theta = 80 \cdot \sin 30^\circ = 80 \cdot \frac{1}{2} \Rightarrow$$

$$F_y = 40 \text{ N.}$$

$$W = m \cdot g = 10 \cdot 10 \Rightarrow W = 100 \text{ N.}$$

$$\Sigma F_y = 0 \Rightarrow F_y + N - W = 0 \Rightarrow N = W - F_y \Rightarrow$$

$$N = 100 - 40 \Rightarrow N = 60 \text{ N.}$$

↑
Normal
force

↑
Newton

$$T = \gamma N = 0,25 \cdot 60 \Rightarrow \boxed{T = 15 \text{ N}}$$

$$b) \Sigma F_x = ma \Rightarrow$$

$$F_x - T = ma \Rightarrow$$

$$68 - 15 = 10 \cdot a \Rightarrow$$

$$\frac{53}{10} = \frac{10a}{10} \Rightarrow$$

$$a = 5,3 \text{ m/s}^2$$

$$d) S = \frac{1}{2} a t^2 \Rightarrow$$

$$S = \frac{1}{2} \cdot 5,3 \cdot 16 \Rightarrow$$

$$S = 8 \cdot 5,3 \Rightarrow$$

$$S = 42,4 \text{ m}$$