

*Biskra University*  
*First-year sciences and technologies*  
**Module: Physic 1**

**Tutorial 5: Solutions**

1)  $W = F \cdot d = F \cos 30 \cdot d$

$$W = 25 \times 4 \cos 30$$

$$W = 36,6 \text{ joule}$$

2) We take  $g = 10 \text{ m/S}^2$

$$F \sin 30 + N - mg = 0$$

$$F \sin 30 + N = mg$$

$$N = mg - F \sin 30$$

$$N = 10 \times 10 - 160 \sin 30$$

$$N = 50 \text{ N}$$

$$W = F \cdot d = -F_f \cdot d \cos \pi$$

$$W = -F_f \cdot d$$

$$W = \mu_N \cdot d$$

$$W = -0,1 \times 50 \times 10$$

$$W = -50 \text{ joule}$$

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3)  $W = \vec{F} \cdot \vec{d}$

$$W = \begin{pmatrix} 0 \\ -15 \\ 0 \end{pmatrix} \cdot \begin{pmatrix} 3 \\ 3 \\ 1 \end{pmatrix} = 3(0) - 15 \times 3 - 1 \times 0$$

$$W = -45 \text{ J}$$

4)  $W = \Delta k$

$$W = k_f - k_i = W = \frac{1}{2} m V_f^2 - \frac{1}{2} m V_i^2$$

$$V_f = \sqrt{1 + 25} = \sqrt{26}$$

$$V_i = \sqrt{4 + 9} = \sqrt{13}$$

$$W = \frac{1}{2} m V_f^2 - \frac{1}{2} m V_i^2$$

$$W = 26 - 13$$

$$W = 13 \text{ J}$$