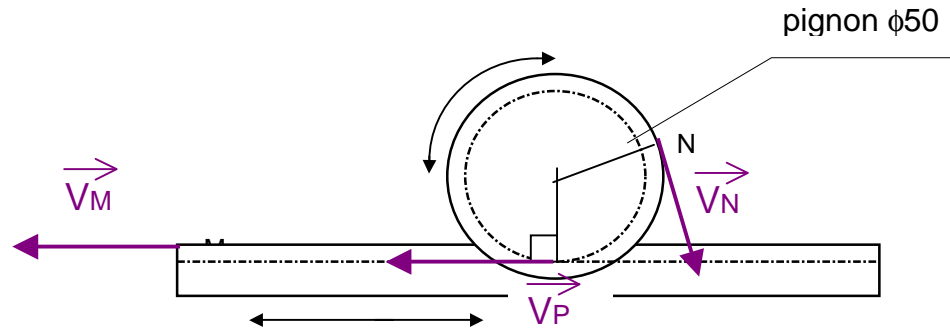


Construction mécanique	ETUDE DES COMPORTEMENTS MECANIQUES	L.P. AULNOYE
EXERCICES	CINEMATIQUE Mouvement de rotation MCU	1

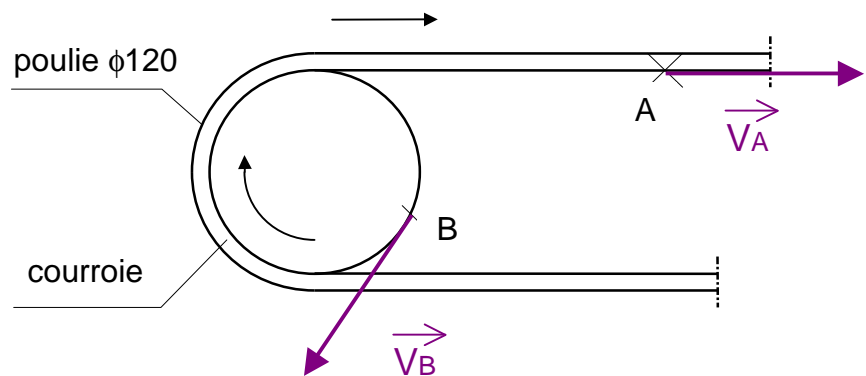
**CORRIGE**

EXERCICE n°1



- $p = \pi \times D = 3,14 \times 0,05 = 0,157m$
- $v = \pi \times D \times n = 0,157 \times 100 = 15,7m/min = 15,7/60 = 0,26m/s$
- $\omega = \pi \times n / 30 = 10,47 \text{ rad/s}$

EXERCICE n°2



- $p = \pi \times D = 3,14 \times 0,120 = 0,377m$
- $v_A = \pi \times D \times n = 0,377 \times 250/60 = 1,57m/s$
- $\omega = \pi \times n / 30 = 3,14 \times 250 / 30 = 26,16 \text{ rad/s}$
- $\omega = v / R = 1,57 / 0,06 = 26,16 \text{ rad/s}$

Construction mécanique	ETUDE DES COMPORTEMENTS MECANIQUES	L.P. AULNOYE
EXERCICES	CINEMATIQUE Mouvement de rotation MCU	2

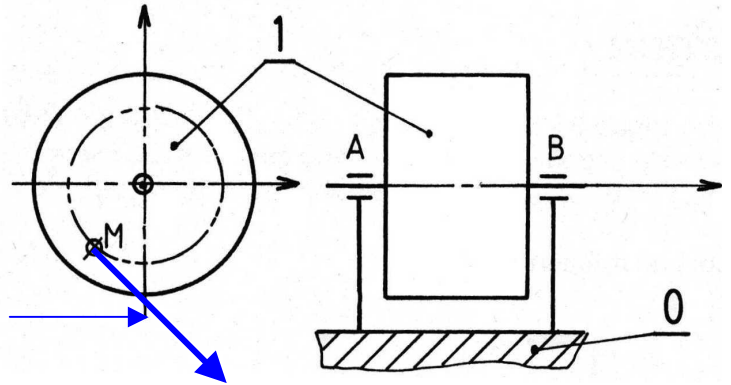
**CORRIGE**

EXERCICE n°3

5.  $\omega_1 = (2\pi \times N_1)/60$

$\omega_1 = (2\pi \times 480)/60 = \underline{50,27 \text{ rad/s}}$

6.  $V_M = \omega_1 \times R_1 = 50,27 \times 50/1000 = \underline{2,51 \text{ m/s}}$



EXERCICE n°4

1. La grande aiguille réalise un tour en 1h soit 60 min d'où  $N_1 = 1/60 \text{ tr/min} = \underline{0,017 \text{ tr/min}}$

2.  $\omega_1 = (2\pi \times N_1)/60 = 2\pi/3600 = \pi/1800 \text{ rad/s} = \underline{0,0018 \text{ rad/s}}$

3. La petite aiguille réalise un tour en 12h soit 720 min  
d'où  $N_2 = 1/720 \text{ tr/min} = \underline{0,0014 \text{ tr/min}}$

4.  $\omega_2 = (2\pi \times N_2)/60 = 2\pi/43200 = \pi/21600 \text{ rad/s} = \underline{0,00015 \text{ rad/s}}$

EXERCICE n°5

1.  $N_{\text{Roues}} = N_{\text{moteur}} \times r = 3600 \times 1/6 = \underline{600 \text{ tr/min}}$

2.  $\omega_{\text{Roues}} = (2\pi \times N_{\text{Roues}})/60 = (2\pi \times 600)/60 = \underline{62,83 \text{ rad/s}}$

3.  $V_M = \omega_{\text{Roues}} \times R_{\text{Roues}} = 62,8 \times 35/100 = \underline{22 \text{ m/s}}$

4.  $V_{\text{véhicule}} = V_M \times 3600/1000 = V_M \times 3,6 = 22 \times 3,6 = \underline{79 \text{ km/h}}$