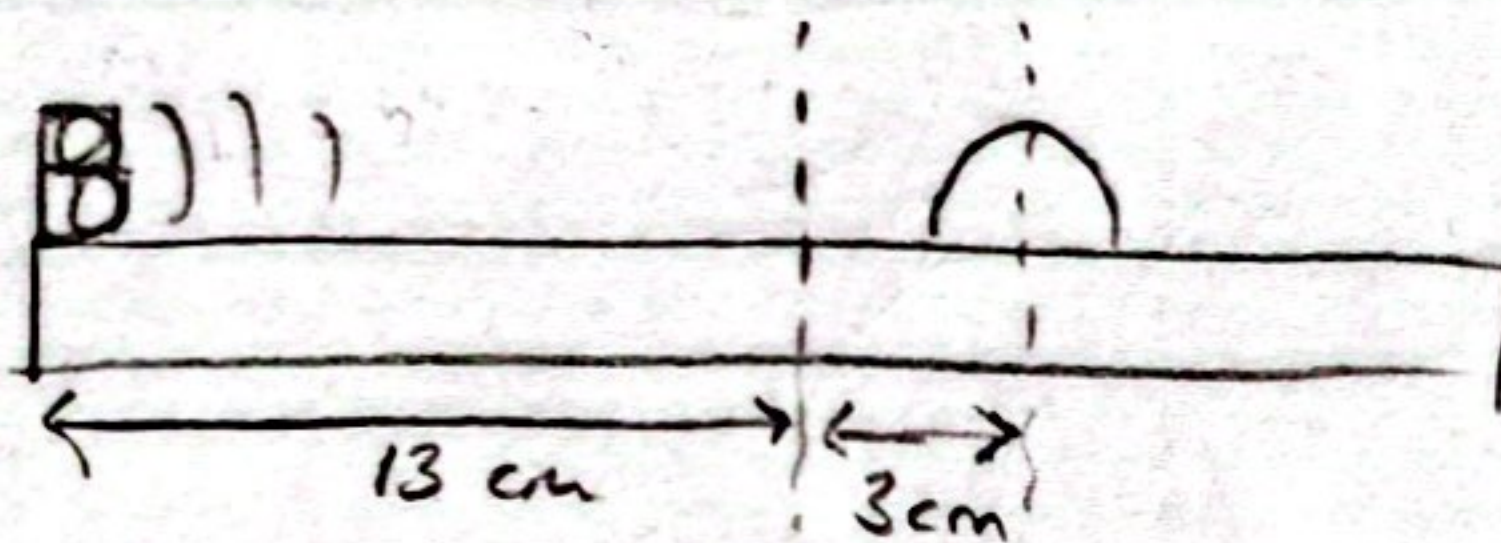
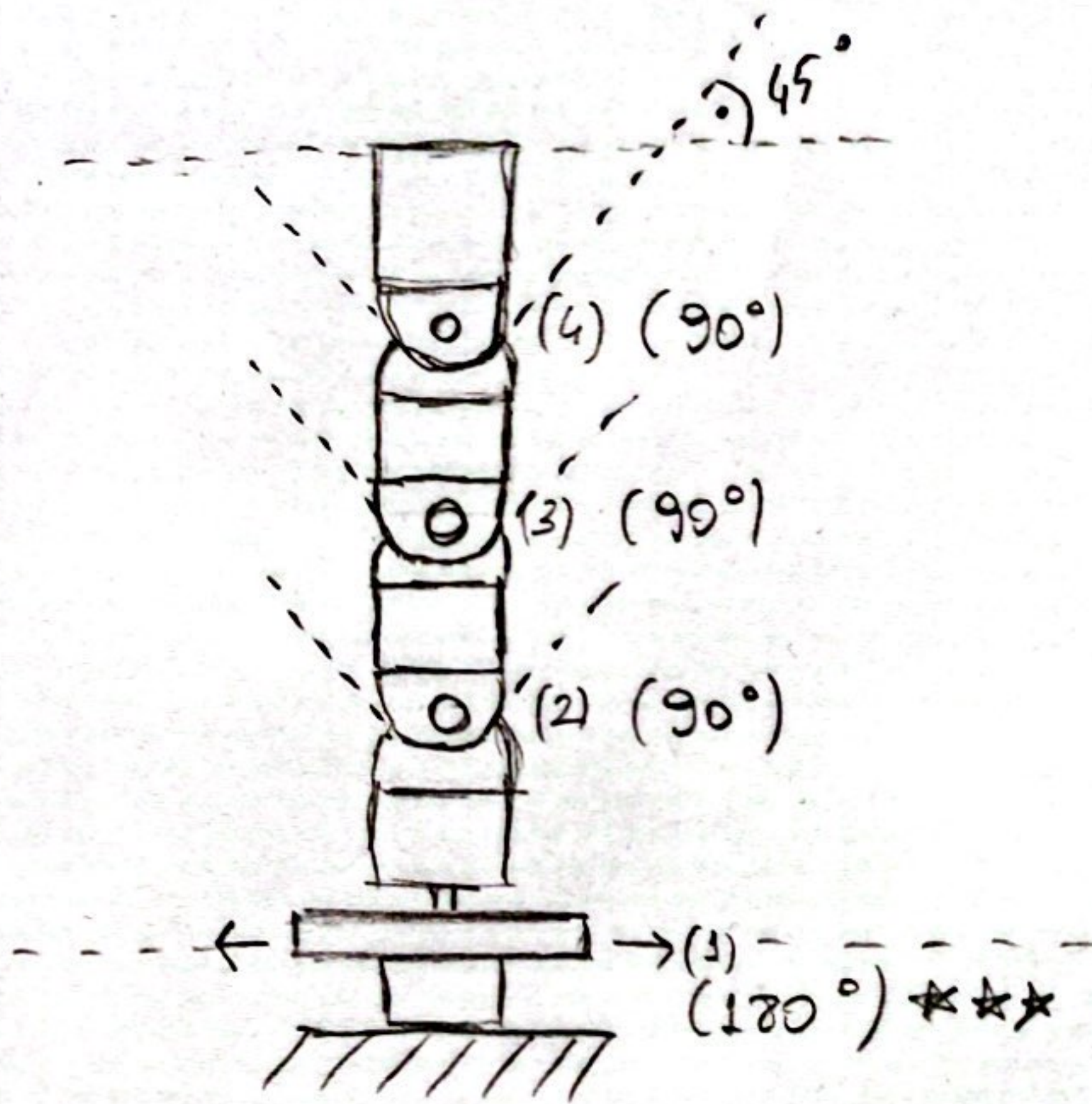


PLD kontrolcü" tasarımı

10.12.2023
(pazar)



$$k_p = 1.00$$

$$k_i = 0.1$$

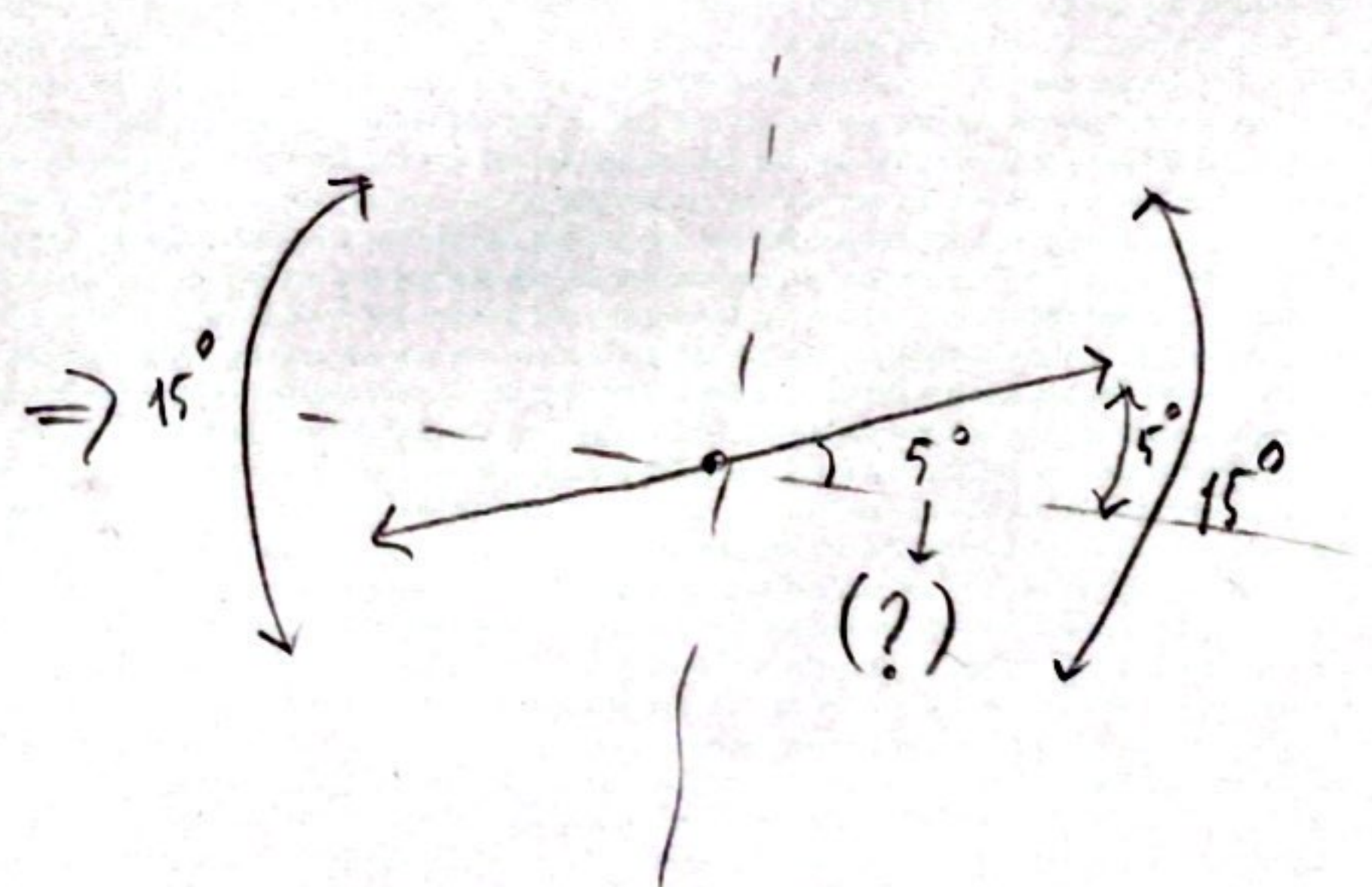
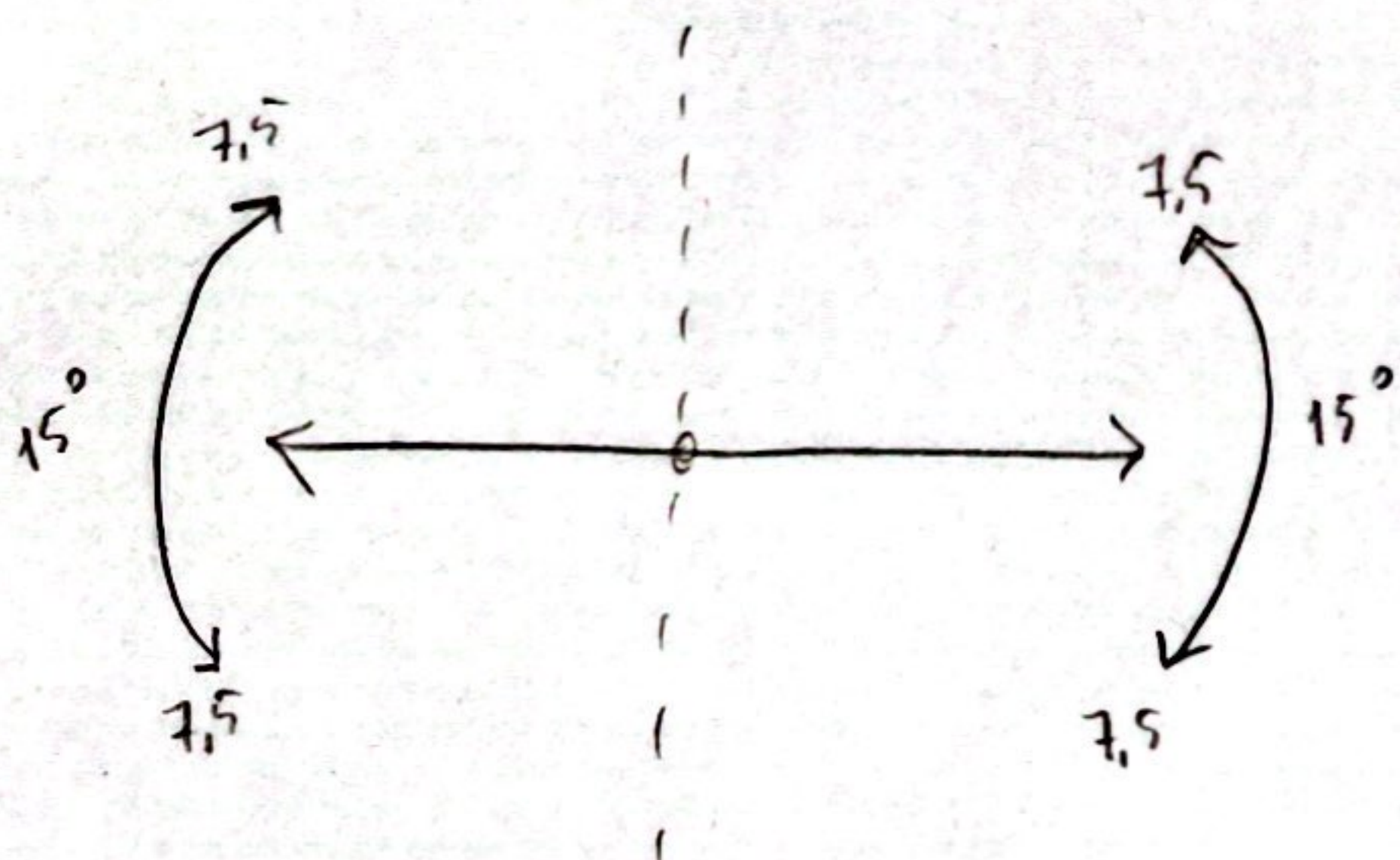
$$k_d = 0.01$$

setpoint = 13 cm
measure = 16 cm

$$\begin{aligned} \text{error} &= 13 - 16 = -3 & \text{error} &= -3 \\ \text{integral} &= 0 + (-3) = -3 & \text{integral} &= -3 \\ \text{derivative} &= \text{error} - \text{last error} = -3 - 0 = -3 \\ \text{proportional} &= \text{error} \times k_p \end{aligned}$$

$$\begin{aligned} \text{output} &= (\text{error} \times k_p) + (\text{integral} \times k_i) + (\text{derivative} \times k_d) \\ &= (-3 \times k_p) + (-3 \times k_i) + (-3 \times k_d) \end{aligned}$$

iteration

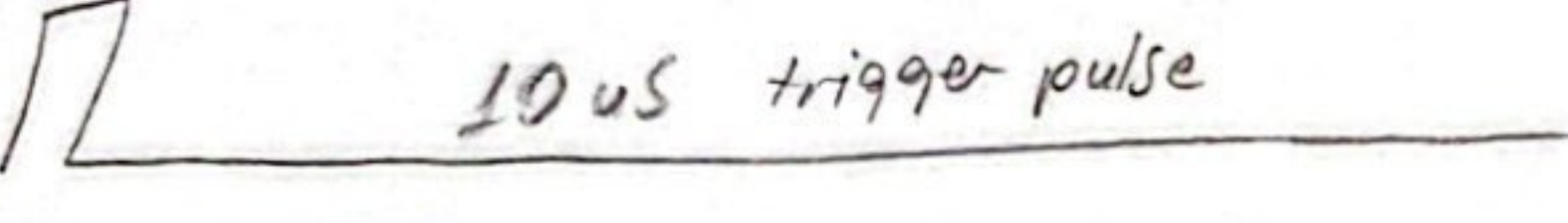



output \Rightarrow 42 || 48

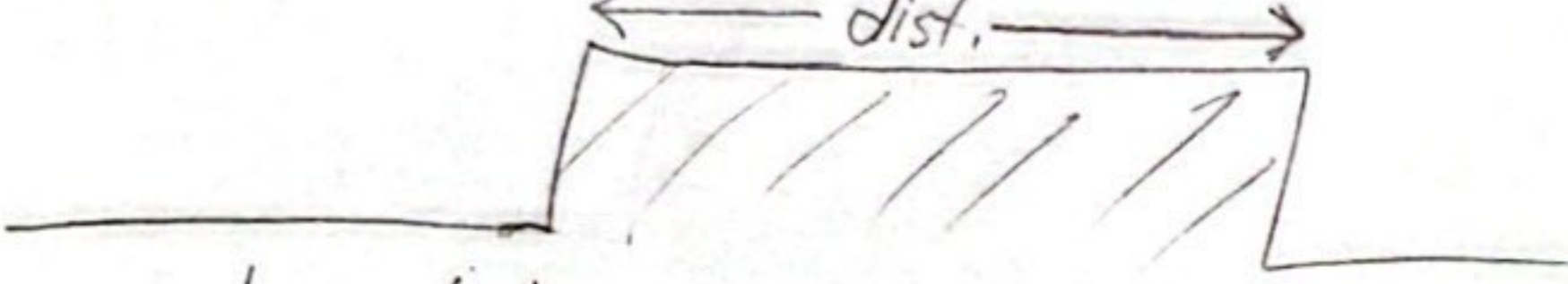
1

Ultrasonic HC-SR04 Module Timing Diagram

15.12.2023

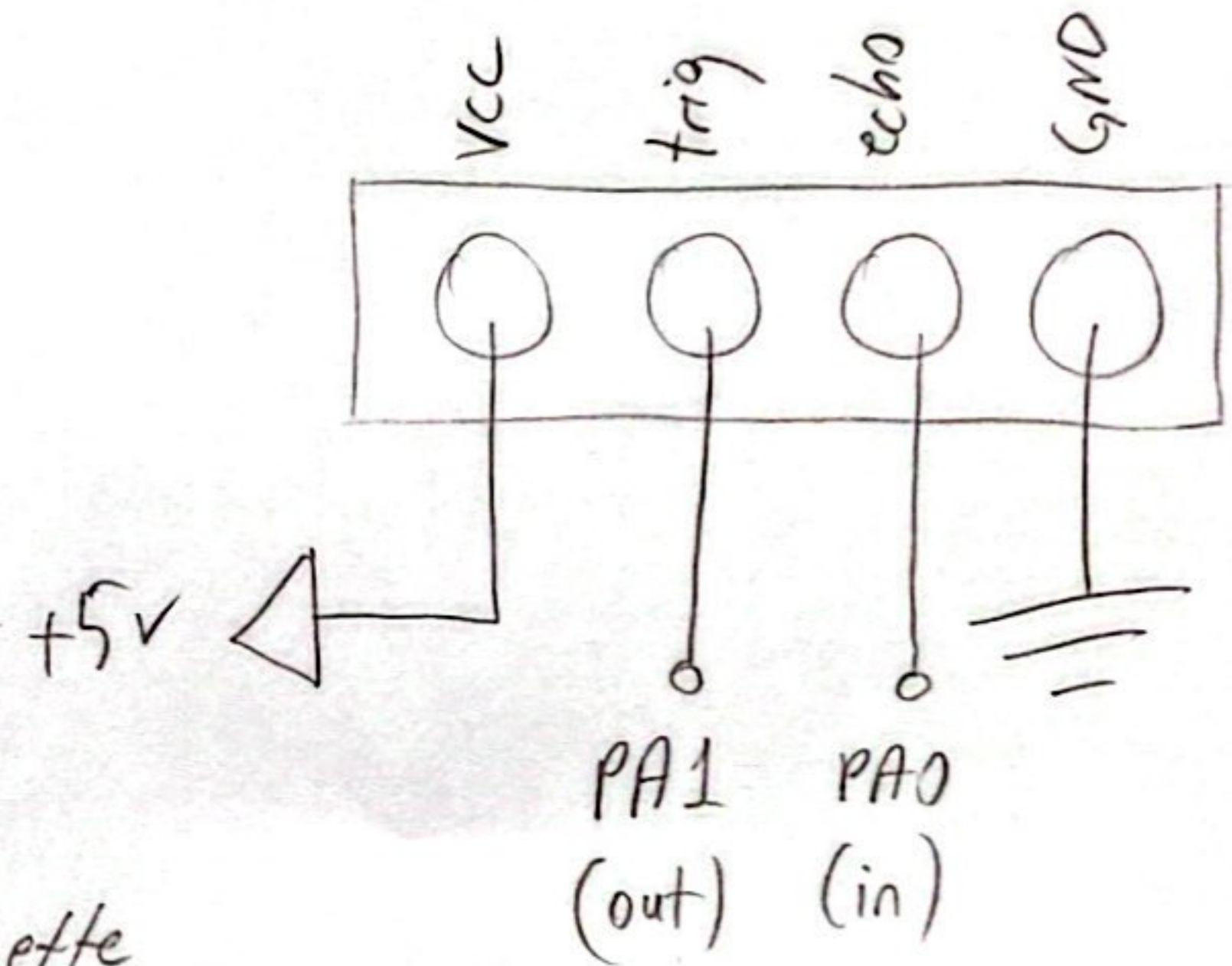
Trig Pin  10us trigger pulse

Pulses from module  8x 40 kHz sound wave generation from HC-SR04

echo Pin 
time taken by pulse to leave and return back

PA0 → echo (input)

PA1 → trigger (output)



→ local_time / 58 → datasheette
tarbiye edilen

/29.2 → Doğru uzaklığın yarısını (nerdeyse)

/15.1 → (-3) offset değeri ile
doğru değer ölçümü
mümkün olmuştur.

Onur AKA
(PID project)