Physical pendulum

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Solution: *Knowing that the period is proportional to the root of the distance between the point of suspension and the center of gravity of the body.,* $t_k = C\sqrt{L_k}$ *with a constant* C*, we have*

$$t_1 = C\sqrt{\Delta L + L_1} \qquad , \qquad t_2 = C\sqrt{\Delta L + L_2} \ ,$$

where ΔL *is the distance between the center of gravity of the body and the attachment point on the rod. With this,*

$$C = \sqrt{\frac{t_2^2 - t_1^2}{L_2 - L_1}} \qquad , \qquad \Delta L = \frac{t_1^2}{C^2} - L_1 \ ,$$

and

$$t_3 = C\sqrt{\Delta L + L_3} = \sqrt{t_1^2 + (t_2^2 - t_1^2)\frac{L_3 - L_1}{L_2 - L_1}} = 2.34 \ s \ .$$