

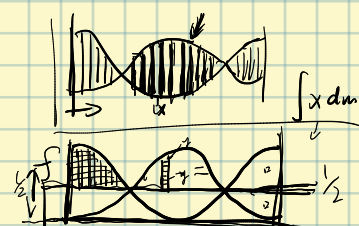
Q: the position of the center of mass. (\bar{x}, \bar{y})

(\bar{x}, \bar{y})

$\int dm = \rho \int_0^1 \cos^2 x - \sin^2 x dx$

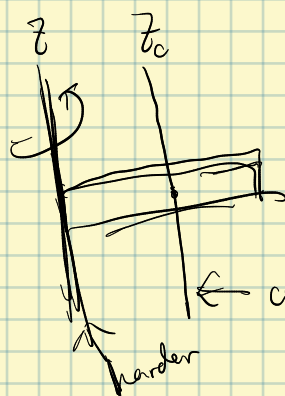
$\bar{x} = \frac{\int x dm}{\int dm}$

$\bar{y} = \frac{\int y dm}{\int dm}$



$M \bar{y} = \int y dm \Rightarrow \bar{y} = 1/2$

$(\bar{x}, \bar{y}) = \left(\frac{(\pi-2)\rho a + 4\rho b + (3\pi+2)\rho c}{4\rho a + 8\rho b + 4\rho c}, 1/2 \right)$

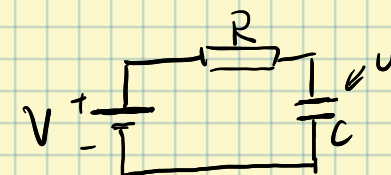


center of mass.
easier to rotate

Q₂. RC circuit

$V = 40V$ $R = 10\Omega$

$C = 0.01F$ U is the voltage of capacitor.



$RC \frac{dU}{dt} + U = V$

1) How many initial values need to know?
| only need to know the initial potential in the capacitor.

2) Find $U(t)$

$RC \frac{d}{dt}(U-V) + (U-V) = 0$

$\Rightarrow (U-V) = U_0 e^{-t/RC}$

$U = V + U_0 e^{-t/RC}$

$\lim_{t \rightarrow \infty} U = V$ charge the capacitor

DC, AC, LCR circuit, phase angle

resistor
inductor
Capacitor