

Weighted Average

The centroid or center of mass of a planar region is the point at which that region balances perfectly, like a plate on the end of a stick. The coordinates of the centroid are given by weighted averages.

The x coordinate of the centroid is $\bar{x} = \frac{\int x dA}{\int dA}$, where dA is an infinitesimal portion of area; the weighting function in this average is just x .

Similarly, the y coordinate of the centroid is $\bar{y} = \frac{\int y dA}{\int dA}$.

Find the centroid (\bar{x}, \bar{y}) of the parabolic region bounded by $x = -1$, $x = 3$, $y = (x - 1)^2$ and $y = 4$.

MIT OpenCourseWare
<http://ocw.mit.edu>

18.01SC Single Variable Calculus
Fall 2010

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.