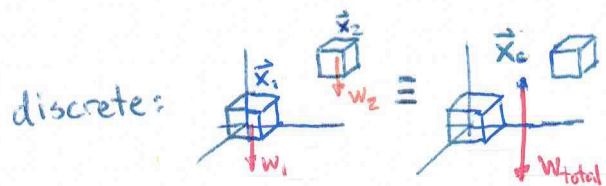


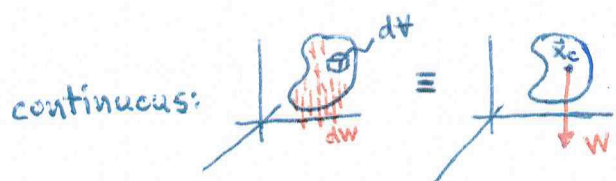
Centre of Geometry, Centroid ($\vec{x}_c$)

assume: gravity is constant and uniform.
density is constant and uniform.

3 dimensional (3D):

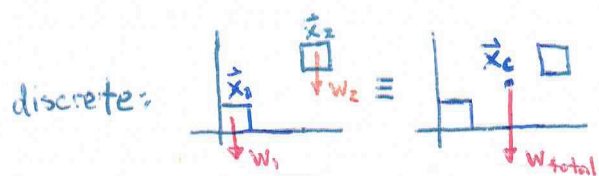


$$\vec{x}_c = \frac{\sum \vec{x}_i \cancel{w_i}}{\sum \cancel{w_i}} = \frac{\sum \vec{x}_i}{\sum 1} = \frac{\sum \vec{x}_i}{n}$$

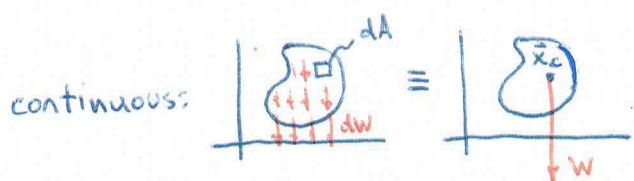


$$\vec{x}_c = \frac{\int \vec{x} \cancel{\rho dV}}{\int \cancel{\rho dV}} = \frac{\int \vec{x} dV}{\int dV} = \frac{\int \vec{x} dV}{V}$$

2 dimensional (2D):

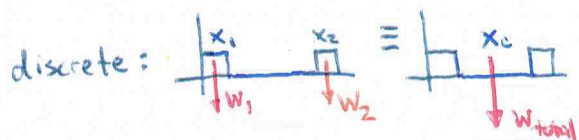


$$\vec{x}_c = \frac{\sum \vec{x}_i \cancel{w_i}}{\sum \cancel{w_i}} = \frac{\sum \vec{x}_i}{\sum 1} = \frac{\sum \vec{x}_i}{n}$$

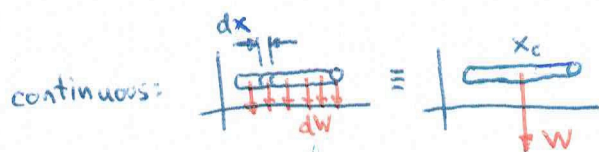


$$\vec{x}_c = \frac{\int \vec{x} \cancel{\rho dA}}{\int \cancel{\rho dA}} = \frac{\int \vec{x} dA}{\int dA} = \frac{\int \vec{x} dA}{A}$$

1 dimensional (1D):



$$x_c = \frac{\sum x_i \cancel{w_i}}{\sum \cancel{w_i}} = \frac{\sum x_i}{\sum 1} = \frac{\sum x_i}{n}$$



$$x_c = \frac{\int x \cancel{\rho dl}}{\int \cancel{\rho dl}} = \frac{\int x dl}{\int dl} = \frac{\int x dl}{l}$$