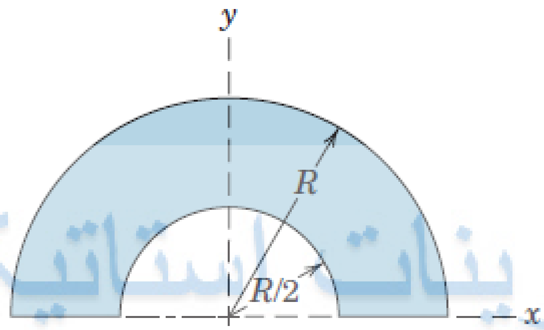
دانشگاه صنعتی شاهرود

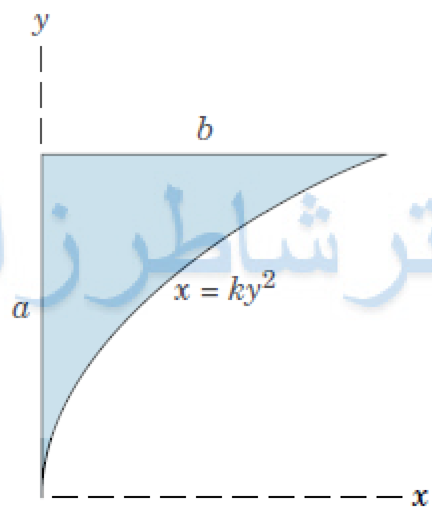
استاتیک

تمرین های فصل پنجم قسمت اول

1 Determine the y-coordinate of the centroid of the area by direct integration.

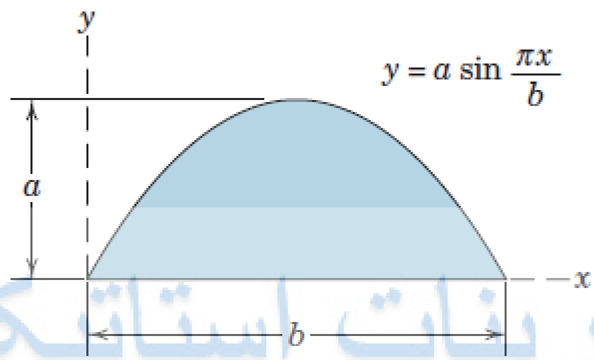


2 Determine the coordinates of the centroid of the shaded area.



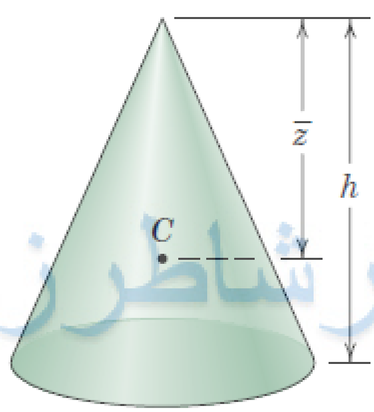
3

Determine the y-coordinate of the centroid of the area under the sine curve shown.

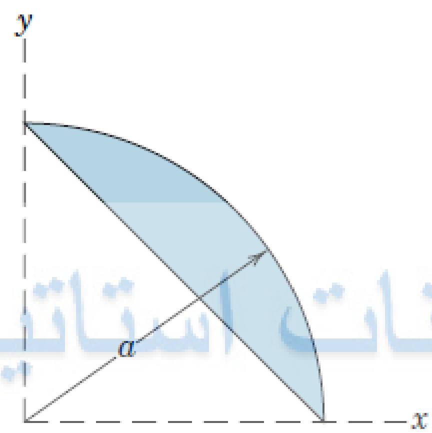


4

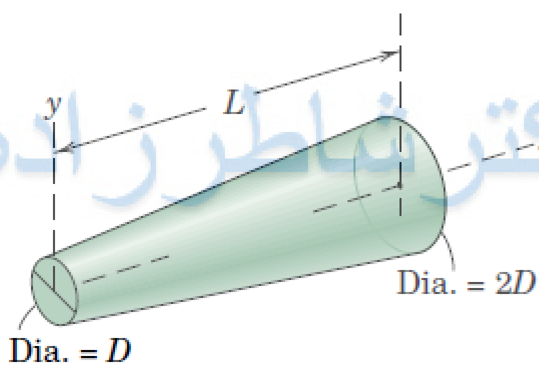
Find the distance $\overline{z}$ from the vertex of the right-circular cone to the centroid of its volume.



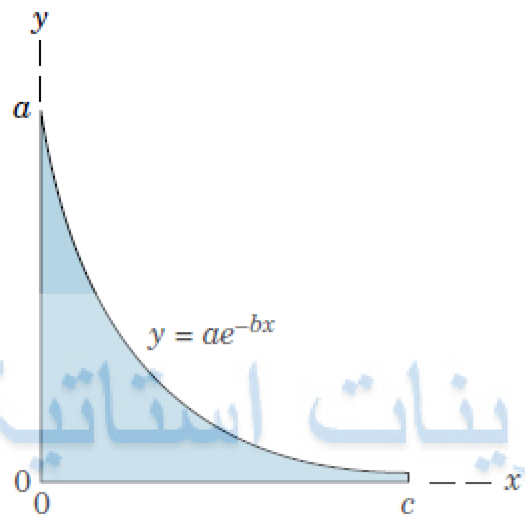
5 Calculate the coordinates of the centroid of the segment of the circular area.



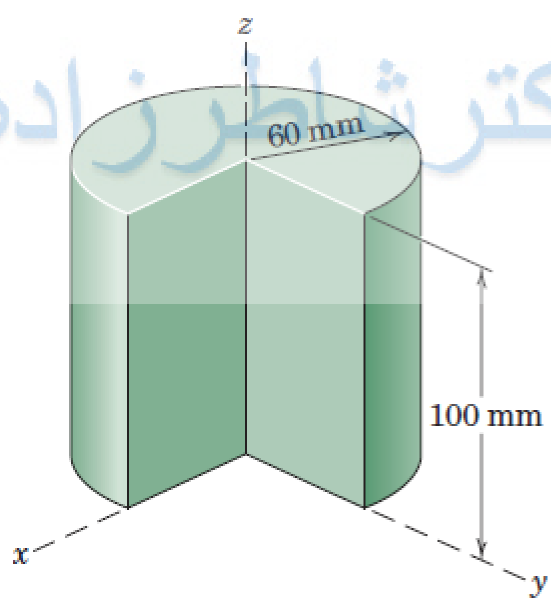
6 Determine the x-coordinate of the mass center of the tapered steel rod of length L where the diameter at the large end is twice the diameter at the small end.



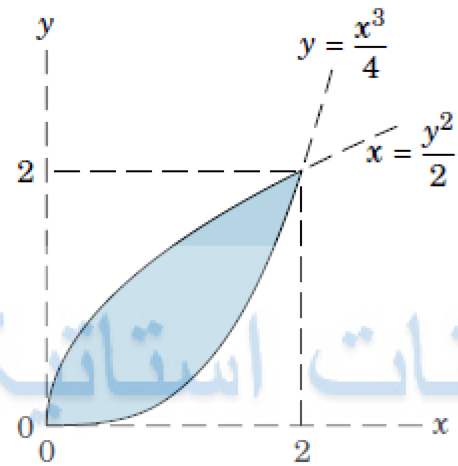
7 Let $c \to \infty$ and determine the x- and y-coordinates of the centroid of the shaded area.



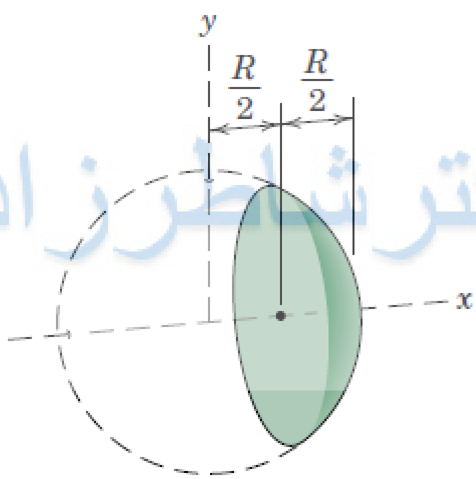
8 Use the results of Sample Problem 5/3 to compute the coordinates of the mass center of the portion of the solid homogeneous cylinder shown.



9 Locate the centroid of the shaded area between the two curves.



10 Determine the x-coordinate of the centroid of the solid spherical segment.



11

Determine the y-coordinate of the centroid of the plane area shown. Set $h = 0$ in your result and compare with the result $\bar{y} = \frac{4a}{3\pi}$ for a full semicircular area (see Sample Problem 5/3 and Table D/3). Also evaluate your result for the conditions $h = \frac{a}{4}$ and $h = \frac{a}{2}$.