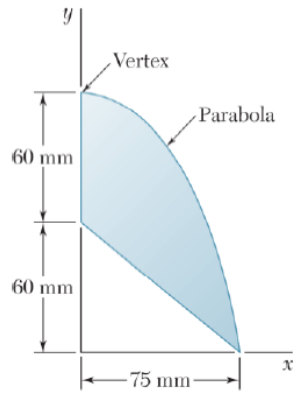
Hw Assignment # 3.

Chapter 5

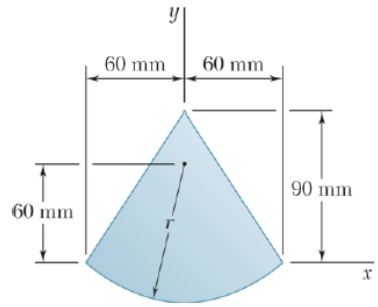
Due on 2018/3/13

Problems



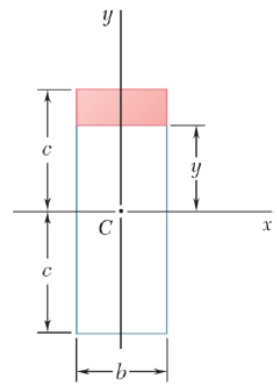

## PROBLEM 5.11

Locate the centroid of the plane area shown.



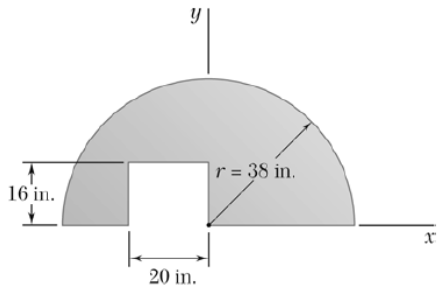

## PROBLEM 5.15

Locate the centroid of the plane area shown.



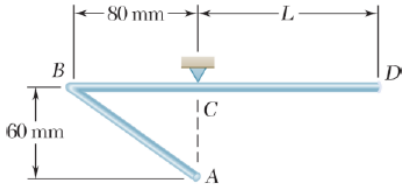

## PROBLEM 5.23

The first moment of the shaded area with respect to the $x$-axis is denoted by $Q_x$. ($a$) Express $Q_x$ in terms of $b$, $c$, and the distance $y$ from the base of the shaded area to the $x$-axis. ($b$) For what value of $y$ is $Q_x$ maximum, and what is that maximum value?



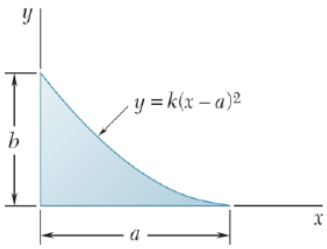

## PROBLEM 5.27

A thin, homogeneous wire is bent to form the perimeter of the figure indicated. Locate the center of gravity of the wire figure thus formed.



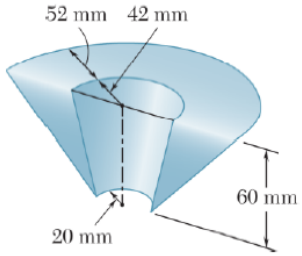

## PROBLEM 5.31

The homogeneous wire *ABCD* is bent as shown and is attached to a hinge at *C*. Determine the length *L* for which portion *AB* of the wire is horizontal.



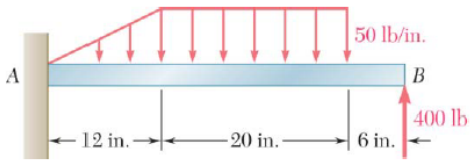

## PROBLEM 5.40

Determine by direct integration the centroid of the area shown. Express your answer in terms of *a* and *b*.



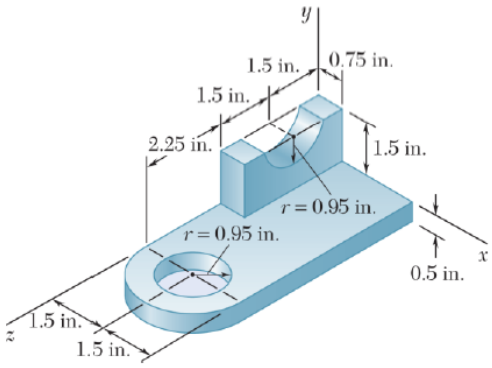

## PROBLEM 5.61

Determine the volume and total surface area of the bushing shown.



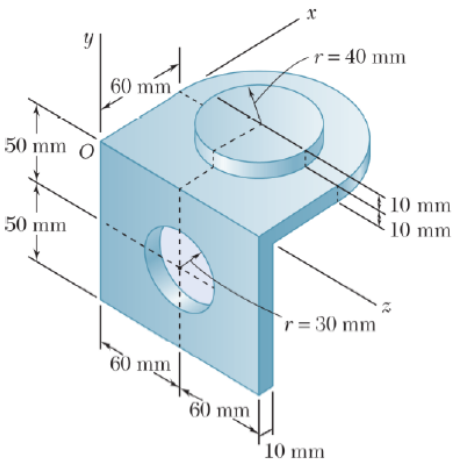

## PROBLEM 5.69

Determine the reactions at the beam supports for the given loading.




## PROBLEM 5.102

For the machine element shown, locate the $y$ coordinate of the center of gravity.




## PROBLEM 5.105

For the machine element shown, locate the $x$ coordinate of the center of gravity.