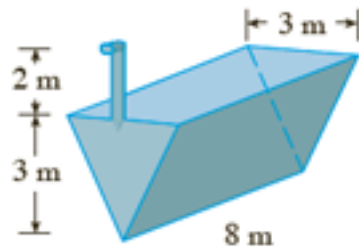


Applications of Integration

- If f is a continuous function, what is the limit as $h \rightarrow 0$ of the average value of f on the interval $[x, x + h]$?

- A tank is full of water. Find the work required to pump the water out of the spout.



- Find the volume of the solid obtained by rotating the region bounded by $x = 1 + y^2$ and $y = x - 3$ about the y -axis.

- Use the diagram to show that if f is concave upward on $[a, b]$, then

$$f_{\text{ave}} > f\left(\frac{a+b}{2}\right)$$

