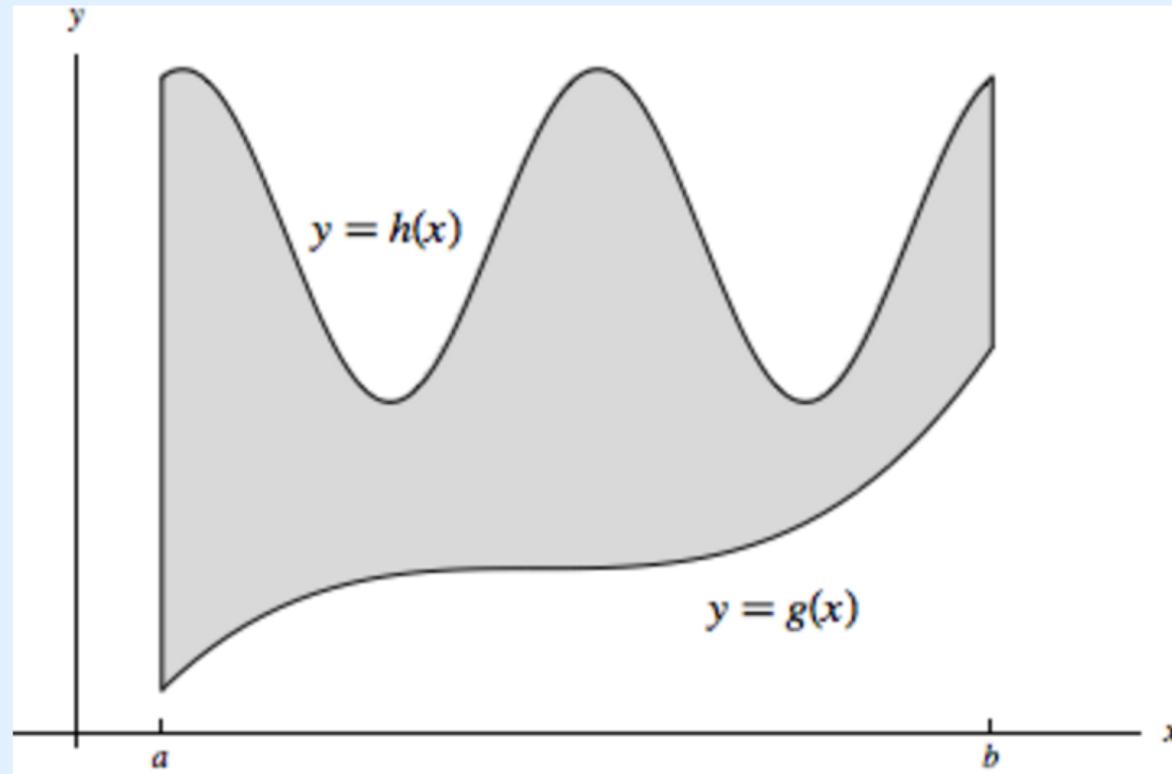


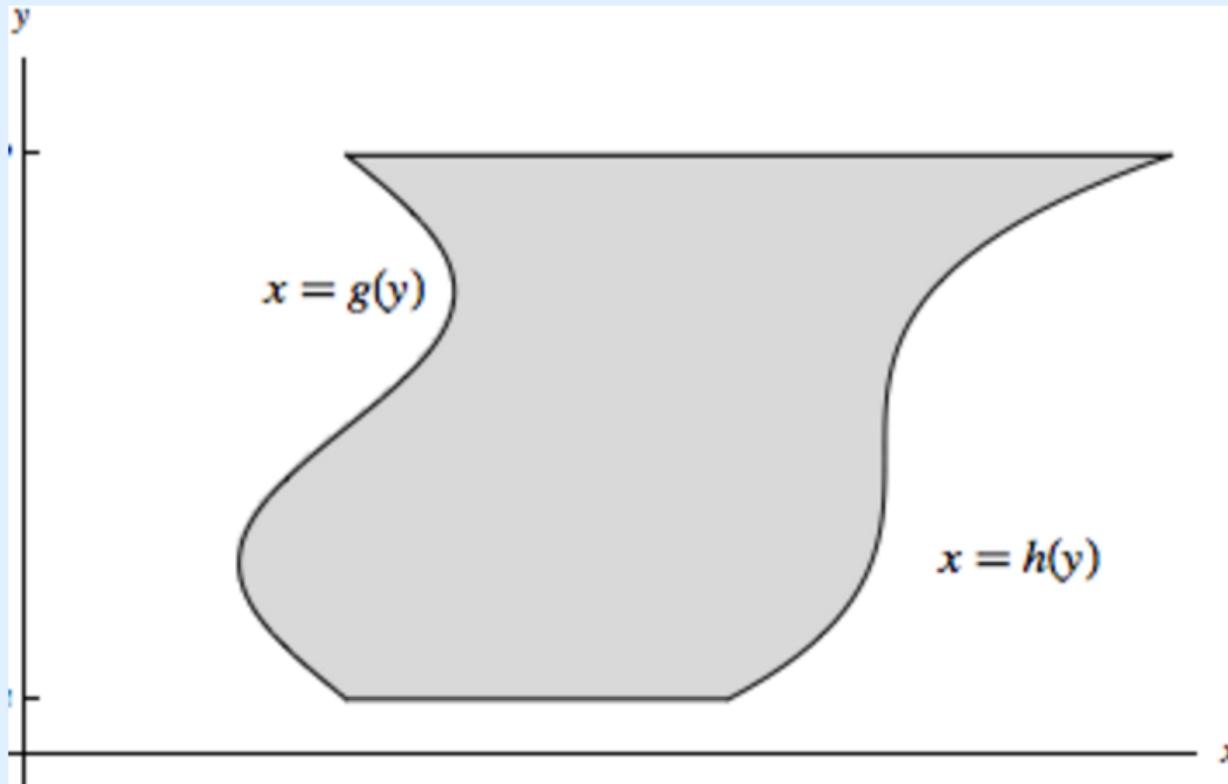
Type I regions are regions that are bounded by vertical lines $x = a$ and $x = b$, and curves $y = g(x)$ and $y = h(x)$, where we assume that $g(x) < h(x)$ and $a < b$. Then we can integrate first over y and then over x :

$$\iint_R f(x, y) dA = \int_{x=a}^b \int_{y=g(x)}^{h(x)} f(x, y) dy dx$$



Type II regions are bounded by horizontal lines $y = c$ and $y = d$, and curves $x = g(y)$ and $x = h(y)$, where we assume that $g(y) < h(y)$ and $c < d$. Then we can integrate first over x and then over y :

$$\iint_R f(x, y) dA = \int_{y=c}^d \int_{x=g(y)}^{h(y)} f(x, y) dx dy$$



- Source:
<https://www.ma.utexas.edu/users/m408s/m408d/CurrentWeb/LM15-3-2.php>
- <http://ksuweb.kennesaw.edu/~plaval/math2203/doubleintgen.pdf>
- Note that in some cases, **the horizontal/vertical lines can be just a point.**

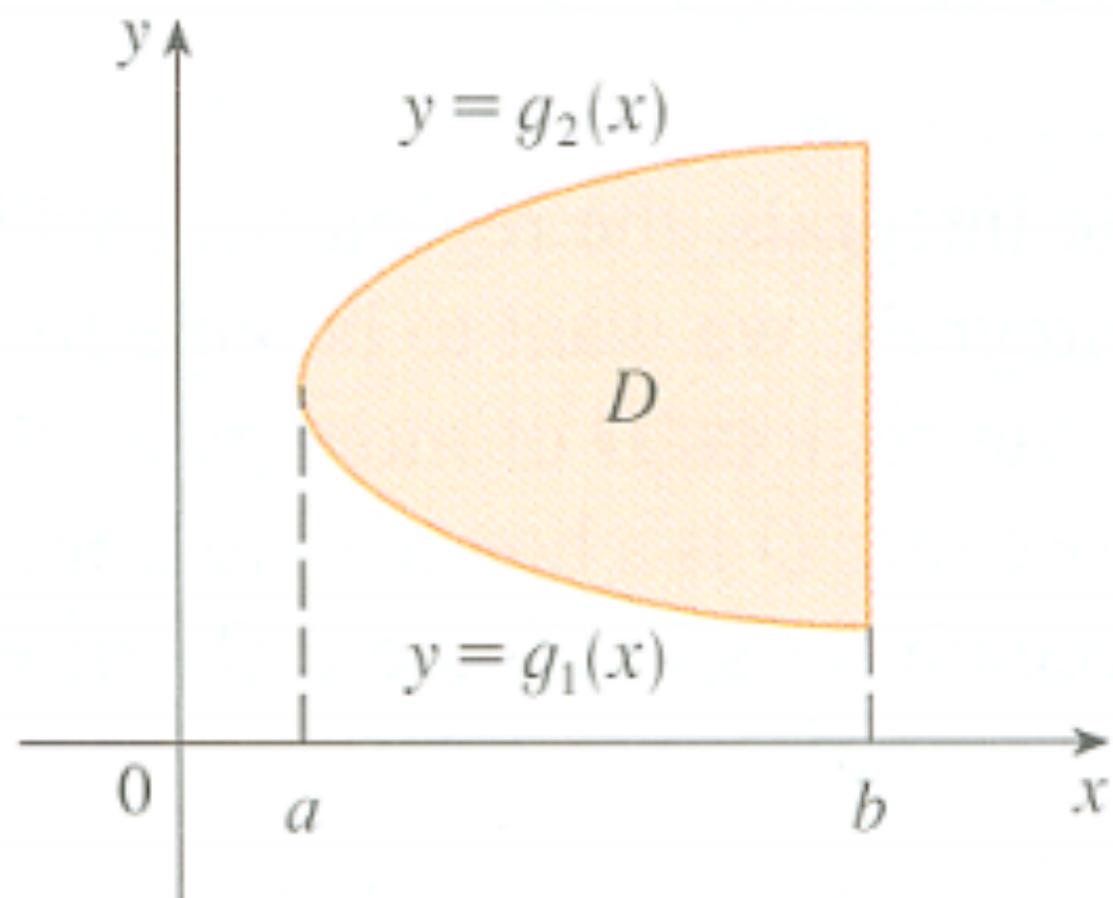


Figure 4.12: Region of type I

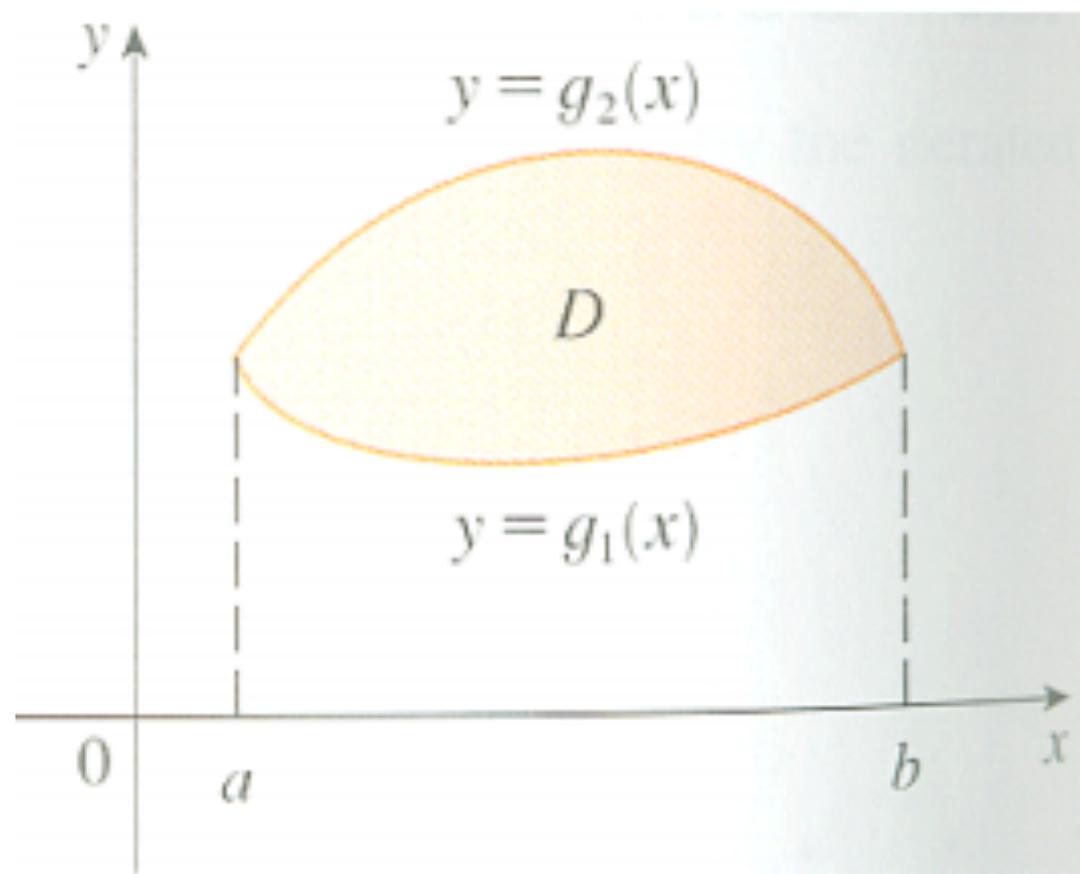


Figure 4.13: Region of type I