Section 6.3: Volume by Slicing

Group work:

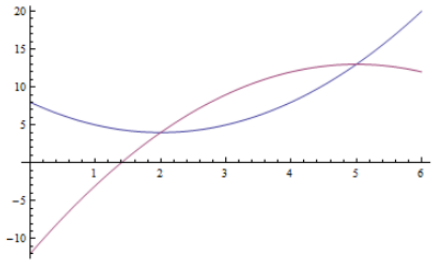
Problem 1 (a) *Consider the region bounded by the curves* $y = x^2 + 8$ *and* $y = 7x - 2$. *Set up an integral that will compute the volume of the solid whose base is the region and whose cross sections perpendicular to the region and the* x*-axis are:*

(i) Squares

(ii) Semicircles

(b) *Do the same as in (a), except that the solid's cross-sections are perpendicular to the region and the* y*-axis.*

Problem 2 *Set up an integral that will find the volume of the solid formed by revolving the region bounded by the curves* $y = x^2 - 4x + 8$ *(i.e.* $x = 2 \pm \sqrt{y-4}$*) and* $y = -x^2 + 10x - 12$ *(i.e.* $x = 5 \pm \sqrt{13 - y}$*) about:*



(a) *the* x*-axis*

(b) $y = -3$

(c) $y = 15$

(d) $x = 1$

(e) $x = 6$

Learning outcomes: