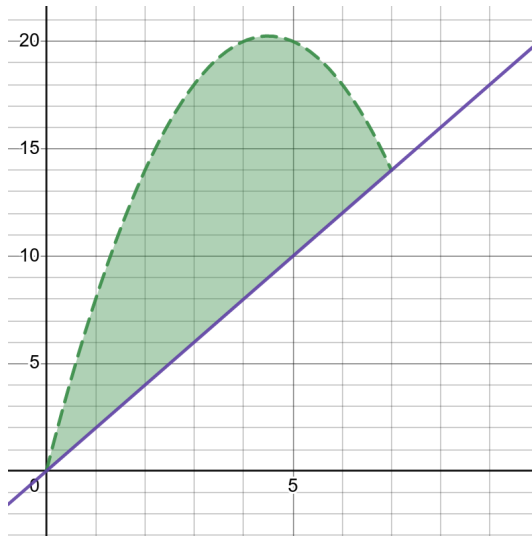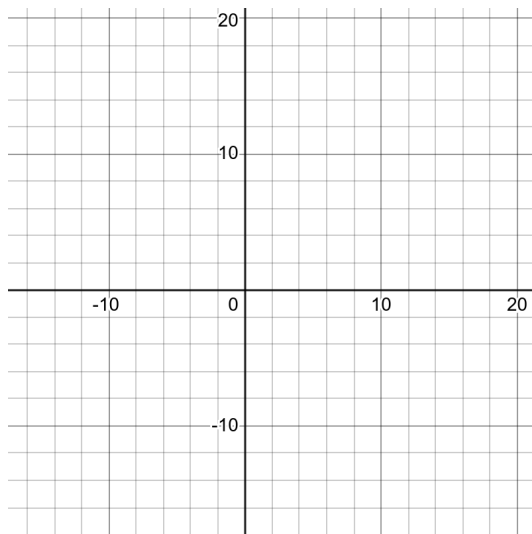1. Find the area of the shaded region enclosed by $y = 9x - x^2$ and $y = 2x$

2. Sketch the region enclosed by $y = 12 - x^2$ and $y = x^2 - 6$

and find the area of that region.

3. Find the volume V of the solid obtained by rotating the region bounded by $y = \sqrt{x-1}, y = 0, x = 8$ about the x axis.

4. Find the volume V of the solid obtained by rotation the region bounded by

$$3x = y^2, x = 0, y = 6$$

about the y axis.

5. Find the volume V of the solid obtained by rotating the region bounded by the given curves about the specified line.

$$y = x^2, x = y^2$$

about $y = 1$

6. Use the method of cylindrical shells to find the volume V generated by rotating the region bounded by the given curves about the y-axis.

$$y = 2e^{-x^2}, y = 0, x = 0, x = 1$$

7. Find the Volume of a pyramid with height h and base an equilateral triangle with side a (a tetrahedron) There is a picture on page 458 in the text.

8. Find the average value of $f(x) = x^2 + 1$ on the interval $[1, 4]$ and find the number c such that $f(c) =$ the average.

9. If the temperature on a day in October is modeled by

$$T(t) = 59 + 19\sin\left(\frac{\pi t}{12}\right)$$

where t is the time after 9 am, what is the average temperature from 9 am to 9 pm.?