Volumes WS CH.7

Name: ____________________________ Per. _____

Volumes rotated about other lines

1) **Set up and use your calculator** to solve the following volumes for the shaded region above.
   
   a) volume about \( x \)-axis  
   b) volume about \( y \)-axis  
   c) vol. about line \( x = 4 \)  

   d) vol. about line \( y = -5 \)  
   e) vol. about line \( x = -3 \)  
   f) vol. about line \( y = 9 \)  

2) **Set up and use your calculator** to solve the following volumes for the shaded region above.
   
   a) volume about \( x \)-axis  
   b) volume about \( y \)-axis  
   c) vol. about line \( x = 10 \)  

   d) vol. about line \( y = -1 \)  
   e) vol. about line \( x = -5 \)  
   f) vol. about line \( y = 20 \)  

3) **Set up and use your calculator** to solve the following volumes for the shaded region above.
   
   a) vol. about line \( y = -7 \)  
   b) vol. about line \( y = 15 \)  

   c) vol. about line \( x = 9 \)  
   d) vol. about line \( x = -8 \)  

\[
y = x^2 \quad \text{and} \quad y = 8x - x^2
\]
Volumes of known cross sections

4) Let R be the region in the first quadrant under the graph of \( y = \sqrt{x-1} \) for \( 1 \leq x \leq 5 \).
Find the volume of the solid whose base is the region R and whose cross sections cut by planes perpendicular to the x-axis (vertical cross sections) are:

(SET UP AND USE YOUR CALCULATOR)

a) squares  
b) equilateral triangles  
c) semicircles

d) rectangle (height = 12 − x)  
e) regular hexagon

Find the volume of the solid whose base is the region R and whose cross sections cut by planes perpendicular to the y-axis (horizontal cross sections) are:

f) squares  
g) equilateral triangles  
h) semicircles

5) \( f(x) = 9 − x^2 \)  \( g(x) = 3 − x \)  
(SET UP AND USE YOUR CALCULATOR)
Find the volume of the solid whose base is the region between \( f(x) \) and \( g(x) \) and whose cross sections cut by planes perpendicular to the x-axis are:

a) squares  
b) equilateral triangles

c) semicircles  
d) rectangle (height = 10 · base)