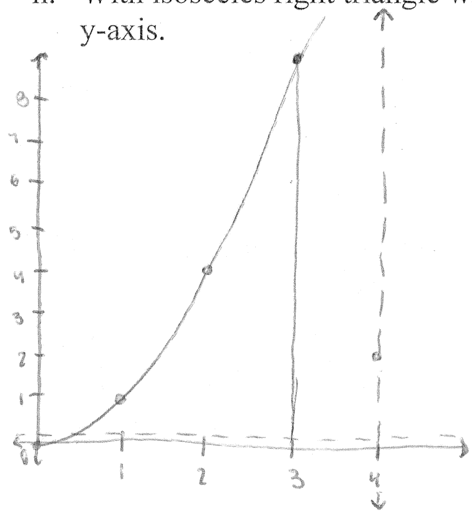
Homework

Set up an integral that could be used to determine the volume of the solids with base between $y = x^2$, *the x-axis, and* $x = 4$.

a. With square cross sections perpendicular to the x-axis.
b. With square cross sections perpendicular to the y-axis.
c. With semicircular cross sections perpendicular to the x-axis.
d. With semicircular cross sections perpendicular to the y-axis.
e. With equilateral triangular cross sections perpendicular to the x-axis.
f. With equilateral triangular cross sections perpendicular to the y-axis.
16 g. With isosceles right triangle with hypotenuse in the base cross sections perpendicular to the x-axis.
h. With isosceles right triangle with hypotenuse in the base cross sections perpendicular to the y-axis.



a. $A = s^2$
$s = \text{upper} - \text{lower}$
$s = (x^2 - 0)^2$
$A = x^4$
$\int_0^4 x^4\,dx = \boxed{204.8}$

b. $A = s^2$
$s = \text{right} - \text{left}$
$A = (4 - \sqrt{y})^2$
$\int_0^{16} (4-\sqrt{y})^2\,dy = \boxed{42.667}$

c. $A = \frac{\pi d^2}{8}$
$d = \text{upper} - \text{lower}$
$A = \frac{\pi (x^2)^2}{8}$
$\int_0^4 \frac{\pi x^4}{8}\,dx = \boxed{80.425}$

d. $A = \frac{\pi d^2}{8}$
$d = \text{right} - \text{left}$
$d = 4 - \sqrt{y}$
$\int_0^{16} \frac{\pi (4-\sqrt{y})^2}{8}\,dy = \boxed{16.755}$

e. $A = \frac{\sqrt{3}}{4} x^2$
$x = \text{upper} - \text{lower}$
$x = x^2 - 0$
$\int_0^4 \frac{\sqrt{3}}{4} x^4\,dx = \boxed{88.681}$

f. $A = \frac{\sqrt{3}}{4} x^2$
$x = \text{right} - \text{left}$
$x = 4 - \sqrt{y}$
$\int_0^{16} \frac{\sqrt{3}}{4} (4-\sqrt{y})^2\,dy = \boxed{18.475}$

g. $A = \frac{x^2}{4}$
$x = \text{upper} - \text{lower}$
$x = x^2 - 0$
$\int_0^4 \frac{(x^2)^2}{4}\,dx = \boxed{51.2}$

h. $A = \frac{x^2}{4}$
$x = \text{right} - \text{left}$
$x = 4 - \sqrt{y}$
$\int_0^{16} \frac{(4-\sqrt{y})^2}{4}\,dy = \boxed{10.667}$