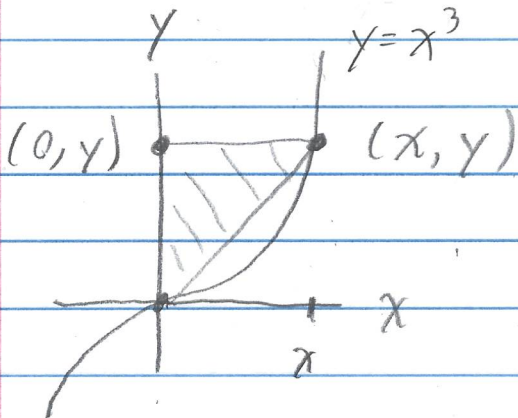


Exercise 2.6.5 A right triangle has one vertex on the graph of $y = x^3$, $x > 0$, at (x, y) , another at the origin, and the third on the positive y -axis at $(0, y)$, as shown here.



Express the area A of the triangle as a function of x .

Solution

The area of a triangle with base b and height h is $A = \frac{1}{2}bh$ (see Note A.2.A). Notice from the figure that the base is $b = x$ and the height is $h = y$. Therefore the area is $A = \frac{1}{2}bh = \frac{1}{2}(x)(y) = \frac{1}{2}xy$.

Since point (x, y) is on the graph of the function $y = x^3$ then we have the area as a function of x as

$$A = A(x) = \frac{1}{2}x(x^3) = \frac{x^4}{2} \quad \square$$