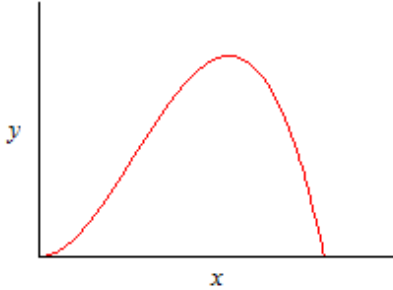


Math 187 – Tutorial on Finding dA

Find an expression for the area dA of the slices indicated.

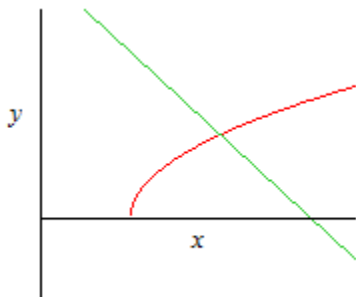
1. Vertical slice: for the area under the curve $y = 2x^2 - x^3$ in the first quadrant.



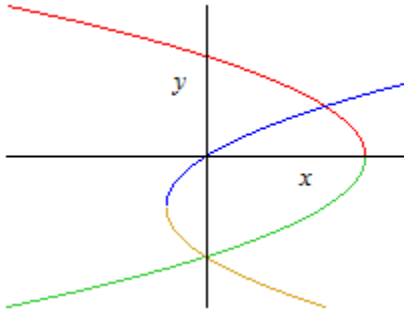
2. Horizontal slice: for the area under the curve $y = 4 - x^2$ in the first quadrant.

3. Vertical slice: for the area between the curves $y = x^2$ and $y = \sqrt{x}$.

4. Horizontal slice: for the area bounded by $y = \sqrt{x-1}$, $y = 3-x$, and $y = 0$.



5. An appropriate slice for the area between the two parabolas $x = y^2 + 2y$ and $x = 4 - y^2$. Also, find the points of intersection for these two parabolas.



6. Find dA for both a vertical slice and horizontal slice for the region bounded by the curve $y = \sqrt{x}$ and the lines $x = 0$ and $y = 3$.

Answers

1. $dA = (2x^2 - x^3) dx$
2. $dA = \sqrt{4 - y} dy$
3. $dA = (\sqrt{x} - x^2) dx$
4. $dA = (2 - y - y^2) dy$
5. $dA = (4 - 2y - 2y^2) dy$, with points of intersection $(0, -2)$ and $(3, 1)$.
6. $dA_{vertical} = (3 - \sqrt{x}) dx$, $dA_{horizontal} = y^2 dy$