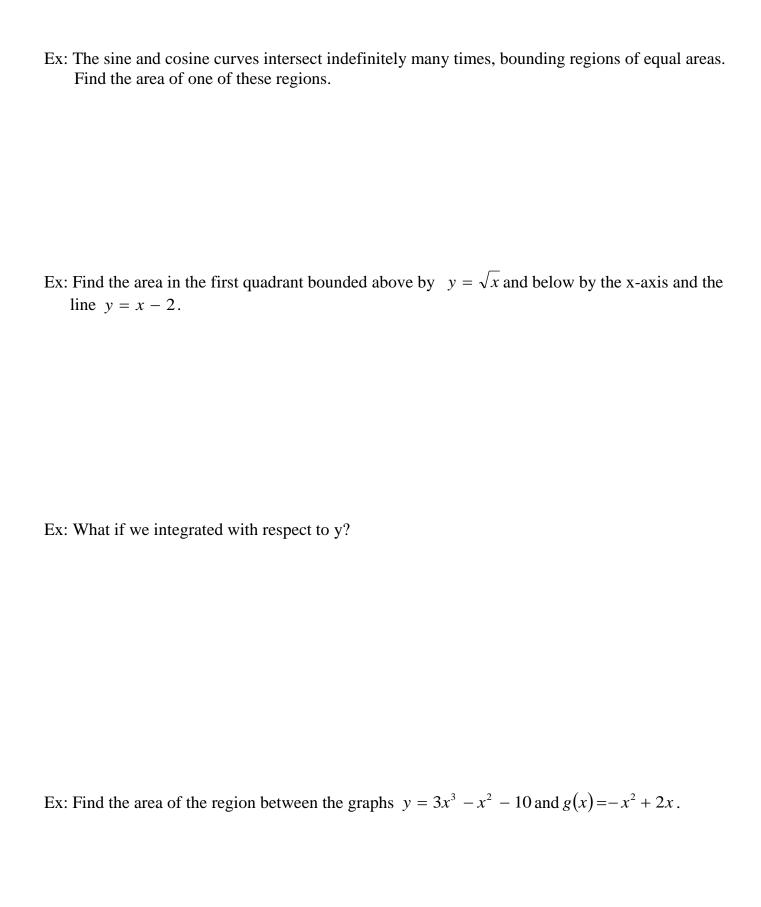
If f and g are continuous function on [a, b] and  $g(x) \le f(x)$  for all x in [a, b], then the area of the region bounded by the graphs of f and g and the vertical line x = a and x = b is:

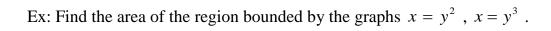
Area = 
$$\int_{a}^{b} [f(x) - g(x)] dx$$

Ex: Find the area of the region bounded by the graphs  $y = 2 - x^2$  and the line y = -x. (We must find where they intersect first)

Ex: Find the area of the region bounded by the graphs  $y = 2 - x^2$  and the line y = x.

Ex: Find the area of the region bounded by the graphs  $y = x^2 + 2$ , y = -x, x = 0, and x = 1.





Ex: Find the area of the region bounded by the graphs  $y = x^2$ , x + y = 2.

Ex: Find the area of the region bounded by the graphs  $y = 2\cos(x)$ ,  $y = x^2 - 1$ .

Ex: Find the area of the region bounded by the graphs  $y = \cos^2(x)$ , y = 1.