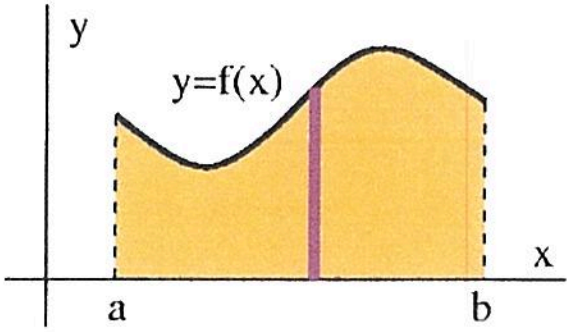
Name: _____ Date:_____

AP Calculus AB: Area Between 2 Curves Ms. Loughran

Remember:



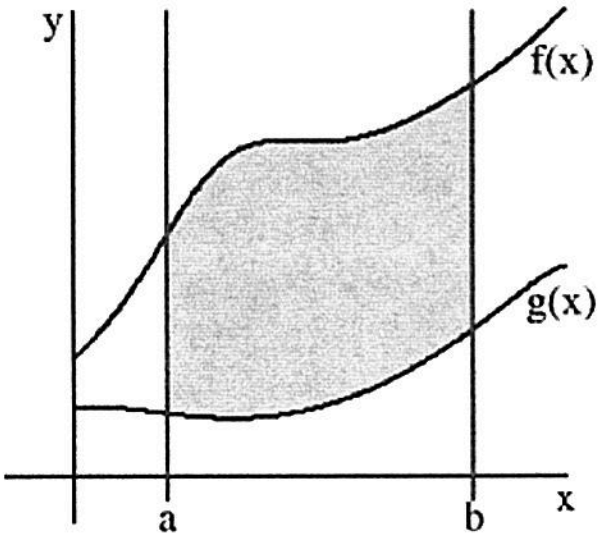
If a function f is continuous on $[a,b]$ and if $f(x) \geq 0$ for all x in $[a,b]$ then the area under the curve $y = f(x)$ over the interval $[a,b]$ is defined by:

$$Area = \lim_{n \to +\infty} \sum_{k=1}^{n} f(x_k)\Delta x$$

Which can be rewritten as : $Area = \int_a^b f(x)dx$

What if the region is not bounded by the x-axis?
What if the area is between 2 curves?

Vertical Strip:



1. Find the area of the region bounded by $y = x + 6$ and $y = x^2$.

2. Find the area of the region bounded by $y = \sin x$ and $y = \cos x$ from $x = 0$ to $x = \frac{\pi}{2}$.

3. Find the area of the region bounded by $y = x^3 - 6x^2 + 8x$ and $y = x^2 - 4x$.

4. Find the area of the region enclosed by $y^2 = 4x$ and $y = 2x - 4$.

Horizontal Strip:

5. Find the area of the region enclosed by $y^2 = x + 2$ and $y = x$.

6. Find a vertical line $x = k$ that divides the area enclosed by $x = \sqrt{y}$, $x = 2$ and $y = 0$ into 2 equal parts.