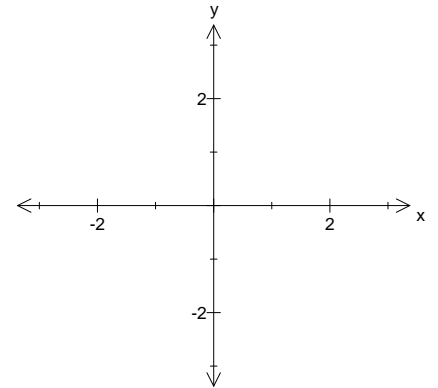


AP Calculus
4.3A – The Definite Integral

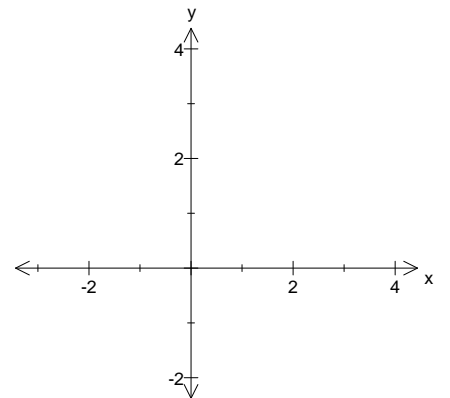
Evaluating a Definite Integral using Geometry

- Remember:
- i. The definite integral always gives you SIGNED (or NET) Area.
 - ii. The definite integral gives you the TOTAL (or PHYSICAL) area only if $f(x) \geq 0$ for all $x \in [a, b]$.

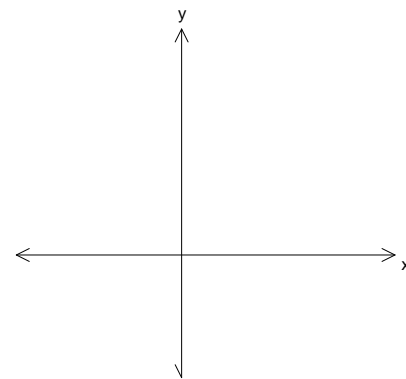
1. Determine geometrically, the value of: $\int_{-2}^2 x \, dx$



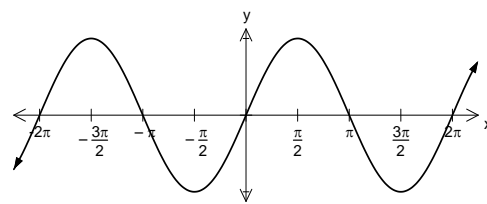
2. Determine geometrically, the value of: $\int_{-2}^3 x+1 \, dx$



3. Given, $\int_{-2}^a x+1 \, dx = 17.5$, determine geometrically, the value of a , $a > 0$.



4. Let $g(t) = \sin t$. $\int_0^{\frac{\pi}{2}} g(t) \, dt = 1$. Determine each of the following integrals.



a. $\int_0^{2\pi} g(t) \, dt$

b. $\int_0^{\frac{3\pi}{2}} g(t) \, dt$

c. $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} g(t) \, dt$

5. Evaluate: $\int_{-3}^3 k \, dr$