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MATH 2301 GW27: Definite Integrals for a Graph Made up of Geometric Shapes(Section 5.2)

Symbol: $\int_{x=a}^{x=b} f(x)dx$

Spoken: The definite integral of $f(x)$ from $x = a$ to $x = b$.

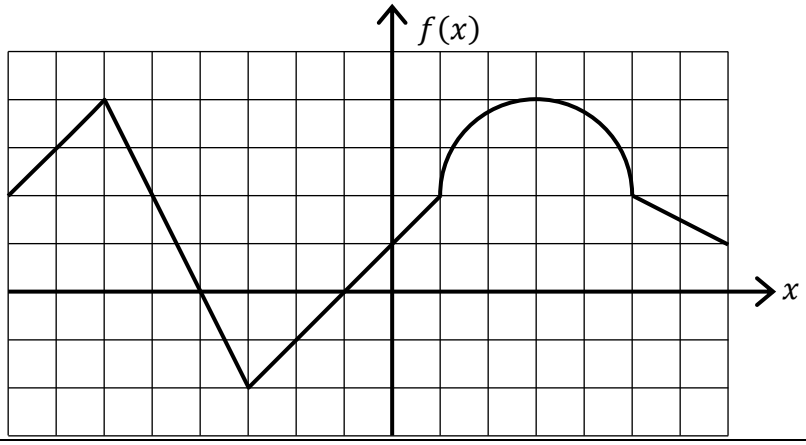
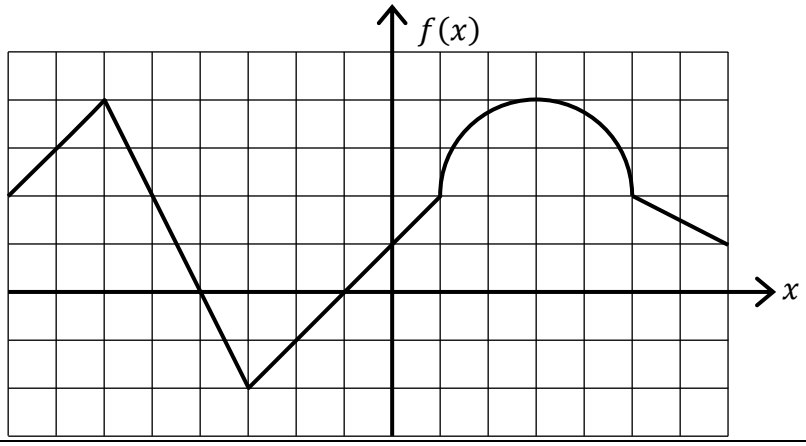
Informal Definition: the *signed area* of the region between the graph of $f(x)$ and the x-axis, from $x = a$ to $x = b$.

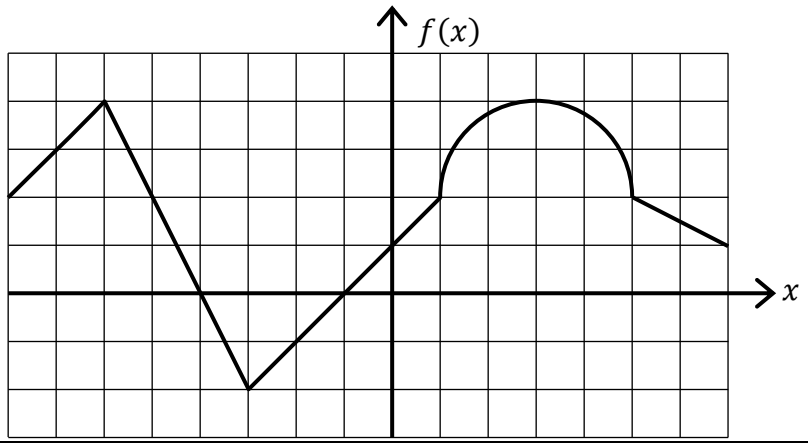
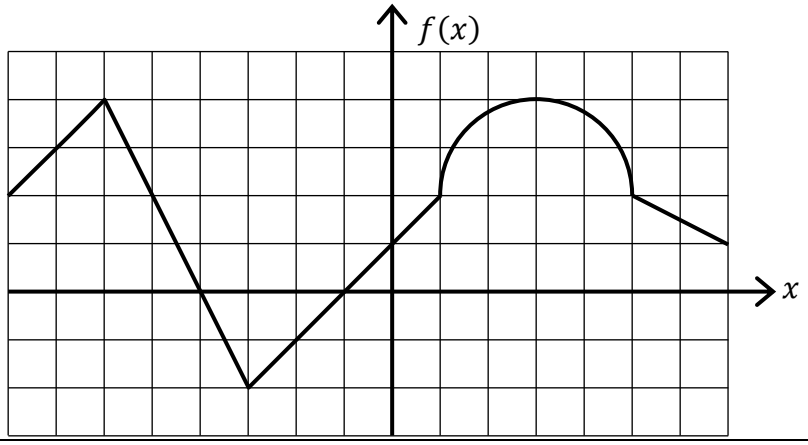
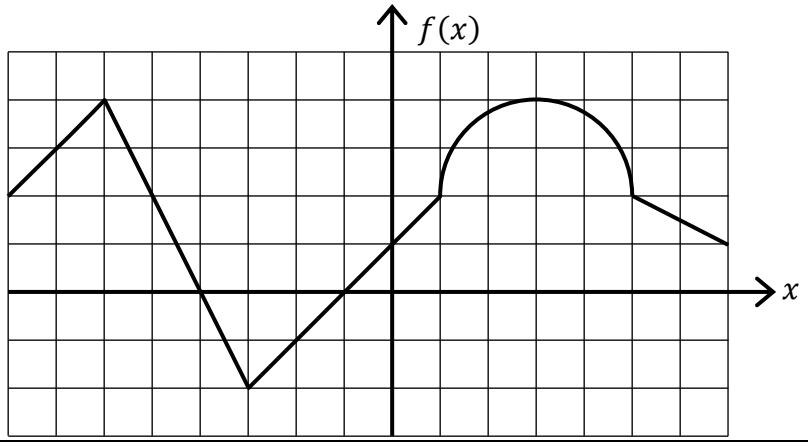
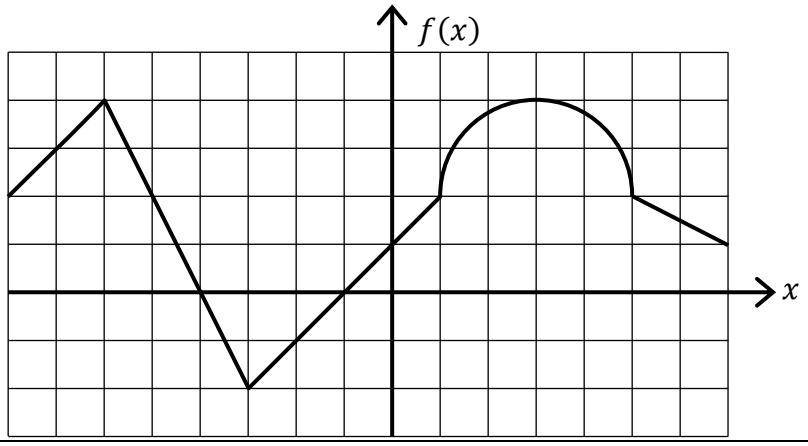
Remark: This is an *informal* definition because we have only have a notion of area for certain basic geometric shapes. For now, this definition of defnite integral can only be used in situations where the region between the graph of $f(x)$ and the x-axis, from $x = a$ to $x = b$, is made up of basic geometric shapes. In those situations, the value of the definite integral can be found by using familiar geometric formulas to compute the areas of the shapes that make up the region.

Instructions: For each definite integral,

(i) Shade the region between the graph of $f(x)$ and the x axis that corresponds to the integral. (Shade the regions above the x axis one color and the regions below the axis a different color.)

(ii) Use geometric formulas to find areas of the shaded shapes. Then find the value of the integral.

Integral	Shaded Region	Value
$(A)\ \int_{x=-6}^{x=1} f(x)dx$		
$(B)\ \int_{x=-5}^{x=1} f(x)dx$		

Integral	Shaded Region	Value
$(C)\ \int_{x=-4}^{x=1} f(x)dx$		
$(D)\ \int_{x=-5}^{x=5} f(x)dx$		
$(E)\ \int_{x=5}^{x=5} f(x)dx$		
$(F)\ \int_{x=5}^{x=1} f(x)dx$		

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