

§5.3: FUNDAMENTAL THEOREM OF CALCULUS

1.] Consider the graph of $f(t) = -2t + 4$ below. Define $A(x) = \int_0^x f(t) dt$. Compute the following values below, and sketch the plot of $y = A(x)$ on the same axis as $y = f(t)$.

a.) $A(0)$

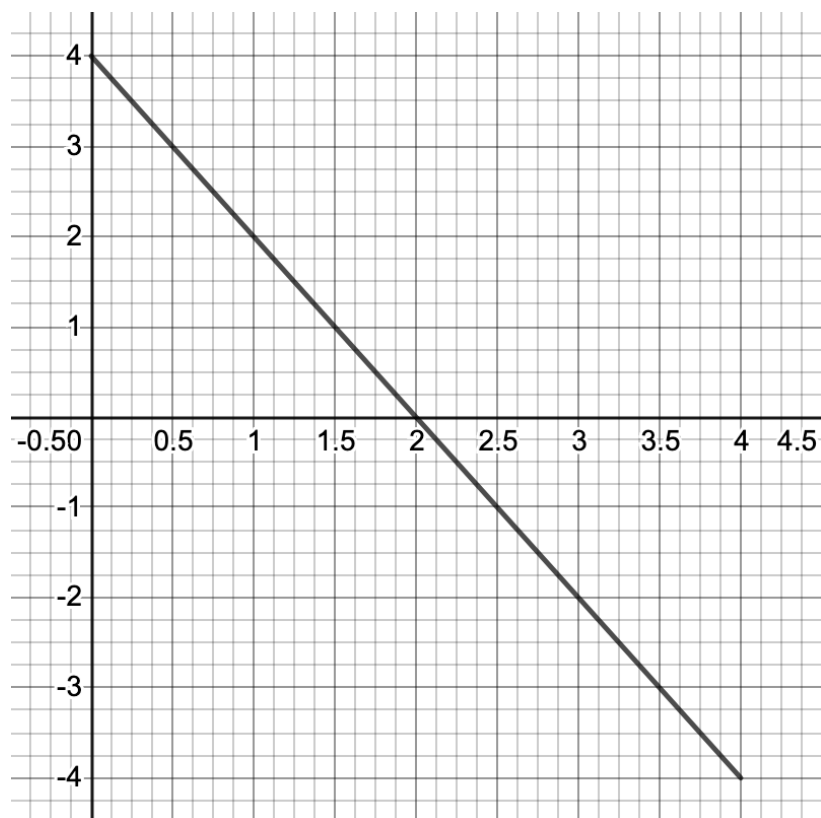
b.) $A(0.5)$

c.) $A(1)$

d.) $A(2)$

e.) $A(3)$

f.) $A(4)$



2.] Compute the following definite integrals:

$$a.) \int_0^9 x^2 dx$$

$$b.) \int_0^2 4x^3 dx$$

$$c.) \int_0^{\ln 8} e^x dx$$

$$d.) \int_0^1 (x + \sqrt{x}) dx$$

$$e.) \int_{\pi/4}^{\pi/2} 8 \csc^2(x) dx$$

$$f.) \int_4^9 \frac{2 + \sqrt{x}}{x} dx$$