

Recall $\int_a^b f(x) dx = F(b) - F(a) = F(x) \Big|_a^b$

where $F(x)$ is any function such that $F'(x) = f(x)$.

Ex 5.5
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$$\int_0^2 (4x^3 - 2x + 1) dx = x^4 - x^2 + x \Big|_0^2$$

$$= (16 - 4 + 2) - 0$$

$$= 18$$

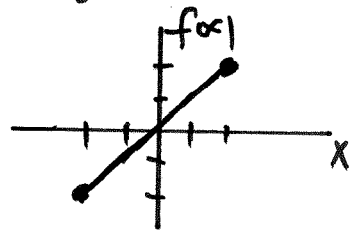
Ex 5.5
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Find the average value of $f(x) = 2x$ on $[-2, 2]$

Consider $\int_{-2}^2 2x dx = x^2 \Big|_{-2}^2 = 4 - 4 = 0$

The average value of $f(x) = 2x$ on $[-2, 2]$

is $\frac{\int_{-2}^2 2x dx}{2 - (-2)} = \frac{0}{4} = 0$.



So the average value we seek is zero